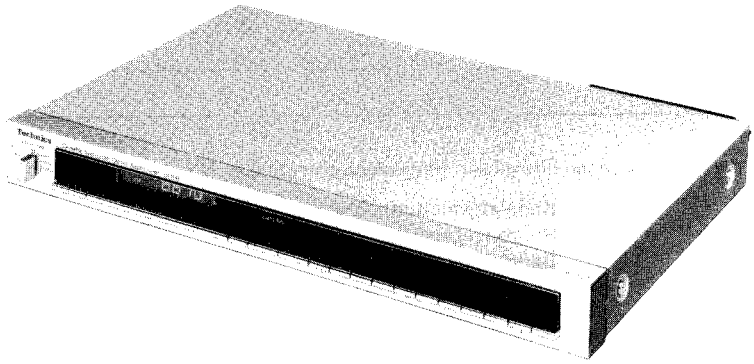
ORDER NO. SD810719O2C8

Service Manual

QUARTZ Synthesizer FM/AM Stereo Tuner

ST-S4T

[DX], [EG], [EF], [EH]
[EB], [DM], [EK], [EW]
[XA]



ST-S4T(K)

[DX], [EG], [EF]
[EK], [EW], [XA]

* The cabinet and front panel are available in black color and silver types.
* The black type model is provided with (K) in the Service Manual.

Areas

* [DX] is available in Scandinavia except European and Denmark.
* [EG] is available in F.R. Germany.
* [EF] is available in France.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [DM] is available in Denmark.
* [EK] is available in United Kingdom.
* [EW] is available in Switzerland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.

English

Specifications

(Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	
	87.9~107.9 MHz (0.2 MHz step)
	87.50~108.00 MHz (0.05 MHz step)
Sensitivity	2.0 μV (IHF, usable)
S/N 30 dB	2.0 μV (300Ω), 1.0 μV (75Ω)
S/N 26 dB	1.8 μV (300Ω), 0.9 μV (75Ω)
S/N 20 dB	1.6 μV (300Ω), 0.8 μV (75Ω)
IHF 46 dB stereo quieting sensitivity	24.5 μV/75Ω
Total harmonic distortion	
MONO (normal)	0.08%
STEREO (normal)	0.1%
S/N	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (73 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~ −1.5 dB
Alternate channel selectivity	
normal ±400 kHz	60 dB
super narrow ±200 kHz	22 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	70 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	90 dB
AM suppression	55 dB
Stereo separation	
1 kHz	50 dB
10 kHz	40 dB
Carrier leak	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	1.9 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	300Ω (balanced)
	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	522 kHz~1611 kHz (9kHz step)
	530 kHz~1620 kHz (10kHz step)
Sensitivity (S/N 20 dB)	30 μV,250 μV/m
Selectivity (±9 kHz)	55 dB
Image rejection at 999 kHz	45 dB
IF rejection at 999 kHz	40 dB

■ TIMER SECTION

Clock	Quartz-lock type
	24-hour indication
Precision	Within ±10 sec. monthly (at 25°C)
Functions	24-hour programmable;
	everyday (2 times),
	once only (1 time)
Programmable content	On/off of program source
	(FM, AM)
	Designation of preset station
Setting intervals	1 minute~23 hours, 59 minutes
	(at 1-min intervals)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Priority order	Once, everyday 2, everyday 1
Memory "back-up"	About 2 months (without AC power)

■ GENERAL

Output voltage	0.3V (0.6V, IHF)
Batteries	DC 4.5V
	(3 "AA" size batteries, Panasonic UM-3 or equivalent)
Power consumption	8W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 53 × 300 mm
	(16-15/16" × 2-3/32" × 11-13/16")
Weight	3.3 kg
	(7.3 lb.)

Deutsch

TECHNISCHE DATEN

(Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ UKW-TUNERTEIL

Wellenbereich	87,9 ~ 107,9 MHz (0,2 MHz step)
	87,50 ~ 108,00 MHz (0,05 MHz step)
Eingangsempfindlichkeit	1,0 µV (nutzbar nach IHF)
	(Nur für Deutshland bestimmt)
	2,0 µV (nutzbar nach IHF)
	(Für andere Länder)
S/R 30 dB	1,0 µV (75 Ω)
	(Nur für Deutshland bestimmt)
S/R 26 dB	0,9 µV (75 Ω)
	(Nur für Deutshland bestimmt)
S/R 20 dB	0,8 µV (75 Ω)
	(Nur für Deutshland bestimmt)
S/R 30 dB	2,0 µV (300 Ω), 1,0 µV (75 Ω)
	(Für andere Länder)
S/R 26 dB	1,8 µV (300 Ω), 0,9 µV (75 Ω)
	(Für andere Länder)
S/R 20 dB	1,6 µV (300 Ω), 0,8 µV (75 Ω)
	(Für andere Länder)
Stereoumschaltschwelle bei 46 dB nach IHF	24,5 µV/75 Ω
Gesamtklirrfaktor	
Mono (normal)	0,08%
Stereo (normal)	0,1%
Geräuschabstand	
Mono	70 dB (78 dB nach IHF)
Stereo	65 dB (73 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+0,5 dB ~ −1,5 dB)
Trennschärfe bei Störsender	
normal ±400 kHz	60 dB
super narrow ±200 kHz	22 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	70 dB
ZF-Dämpfung bei 98 MHz	90 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	90 dB
AM-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	50 dB
10 kHz	40 dB
Trägerrest	
19 kHz	−30 dB (−35 dB nach IHF)
38 kHz	−45 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	1,9 µV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	
	75 Ω (unsymmetrisch) (Nur für Deutshland bestimmt)
	300 Ω (symmetrisch) (Für andere Länder)
	75 Ω (unsymmetrisch) (Für andere Länder)

■ AM-TUNERTEIL

Wellenbereiche	522 kHz ~ 1611 kHz (9 kHz step)
	530 kHz ~ 1620 kHz (10 kHz step)
Eingangsempfindlichkeit (S/R 20 dB)	30 µV, 250 µV/m
Trennschärfe (±9 kHz)	55 dB
Spiegelfrequenz-Dämpfung bei 999 kHz	45 dB
ZF-Dämpfung bei 999 kHz	40 dB

■ TIMER

Uhr	Quarzuhr mit 24-Stunden-Anzeige
Genauigkeit	max. 10 Sek./Monat (bei 25°C)
Funktionen	24-Stunden-Programmierung
	für täglichen (2-fach)
	und einmaligen Betrieb (einfach)
Programmierung	Ein- und Ausschalten der Tonquelle
	[FM (UKW), AM (MW)] Wahl des zu empfangenden Senders
Einschaltdauer	1 Min. bis 23 Stdn. 59 Min.
	(in 1-Minuten-Intervallen)
Prioritätenfolge	"once", "everyday 2", "everyday 1"
Sicherung der im Speicher enthaltenen	etwa 2 Monate
Informationen	(ohne Netzstromversorgung)

■ ALLGEMEINE DATEN

Ausgangsspannung	0,3 V (0,6 V, IHF)
Batterien	4,5 V
	(3 Batterien der Größe AA; Panasonic UM-3 o.ä.)
Leistungsaufnahme	8W
Netzspannung	
	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 53 × 300 mm
Gewicht	3,3 kg

Français

CARACTERISTIQUES

(Subjet á changement sans préaris.)

(DIN 45 500)

■ SECTION SYNTONISATEUR FM

Gamme de fréquence	87,9~107,9 MHz (0,2 MHz step)
	87,50~108,00 MHz (0,05 MHz step)
Sensibilité	2,0 µV (IHF utilisable)
S/B 30 dB	2,0 µV (300Ω), 1,0 µV (75Ω)
S/B 26 dB	1,8 µV (300Ω), 0,9 µV (75Ω)
S/B 20 dB	1,6 µV (300Ω), 0,8 µV (75Ω)
Sensibilité stéréo au seuil de 46 dB, IHF	24,5 µV/75Ω
Distorsion harmonique totale	
MONO (normal)	0,08%
STEREO (normal)	0,1%
Signal/Bruit	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (73 dB, IHF)

Réponse de fréquence	20 Hz~15 kHz, +0,5 dB~ −1,5 dB
Sélectivité alternée par canal	
normal ±400 kHz	60 dB
super narrow ±200 kHz	22 dB
Taux de capture	1,0 dB
Rejection d'image à 98 MHz	70 dB
Rejection FI à 98 MHz	90 dB
Rejection de réponse parasite à 98 MHz	90 dB
Suppression AM	55 dB
Séparation stéréophonique	
1 kHz	50 dB
10 kHz	40 dB
Fuite de porteuse	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz~6,300 Hz)	±1,0 dB
Point de limite	1,9 μV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	300Ω (symétrique)
	75Ω (asymétrique)

■ SECTION SYNTONISATEUR AM

Gamme de fréquence	522 kHz~1611 kHz (9 kHz step)
	530 kHz~1620 kHz (10 kHz step)
Sensibilité (S/B 20 dB)	30 μV, 250 μV/m
Sélectivité (±9 kHz)	55 dB
Réjection d'image à 999 kHz	45 dB
Réjection FI à 999 kHz	40 dB

■ PROGRAMMATEUR

Horloge	Du type verrouillage à quartz
	Affichage basé sur le système des 24 heures
Précision	Marge de 0 à +10 secondes, mensuellement (à 25° C)
Fonctions	Programmations possibles sur 24 heures: tous les jours (deux fois), une fois seulement (une fois)
Eléments de programmation	Programmation de sources sonores (marche/arrêt) (FM, AM)
Intervalles de réglage	De 1 minute à 23 heures, 59 minutes (par intervalles de 1 minute)
Ordre de priorité	"once" (une fois), "everyday 2" (tous les jours 2), "everyday 1" (tous les jours 1)
Durée des fonctions de mémoire	Environ 2 mois (sans alimentation C.A.)

■ DIVERS

Tension de sortie	0,3 V (0,6 V, IHF)
Piles	4,5V c.c. (3 pile de type "AA", Panasonic UM-3 ou équivalent)
Consommation	8W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 53 × 300 mm
Poids	3,3 kg

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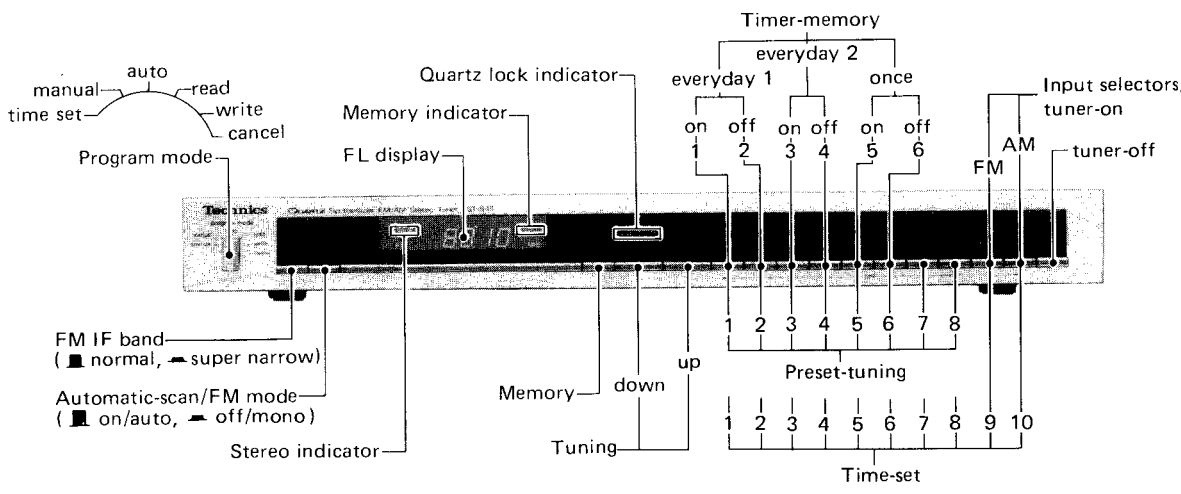
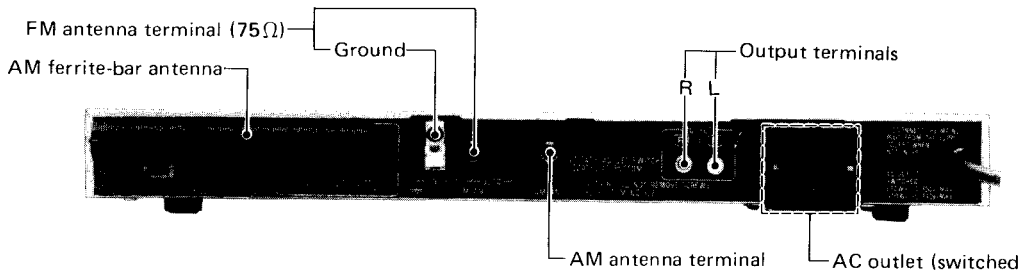
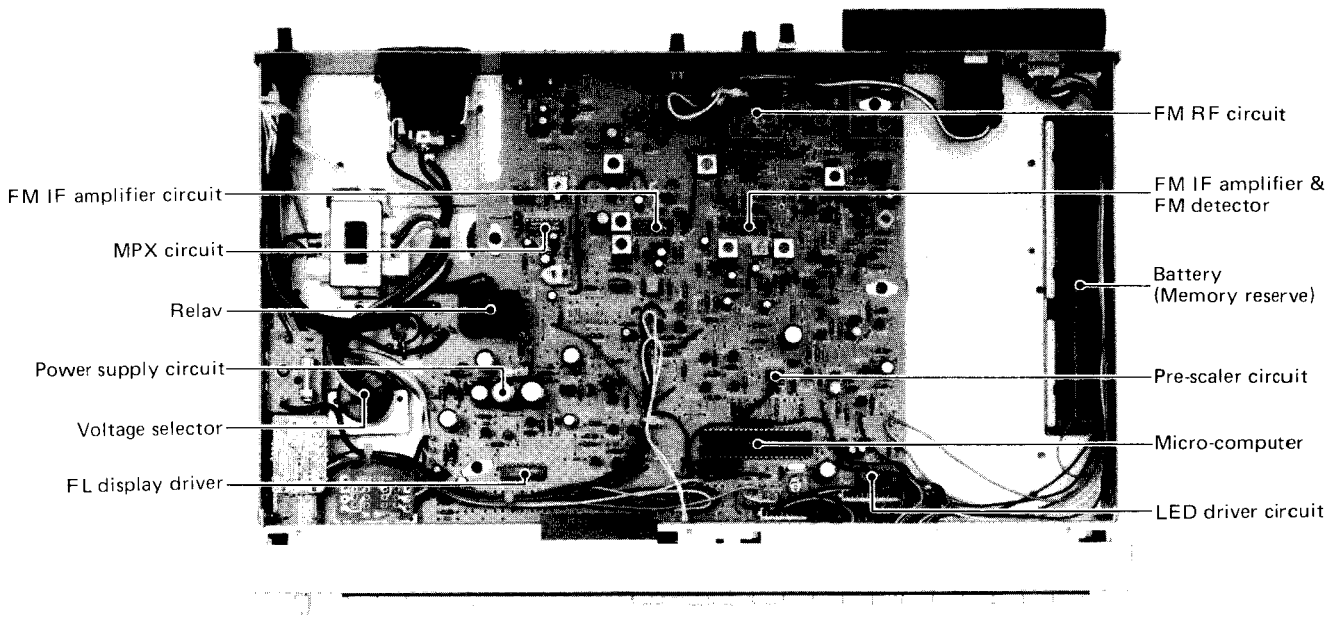
■ LOCATION OF CONTROLS





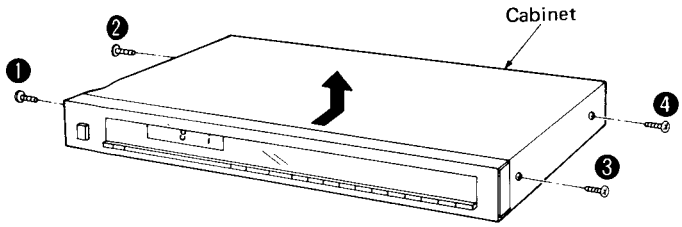
• Voltage selector switch located at bottom.



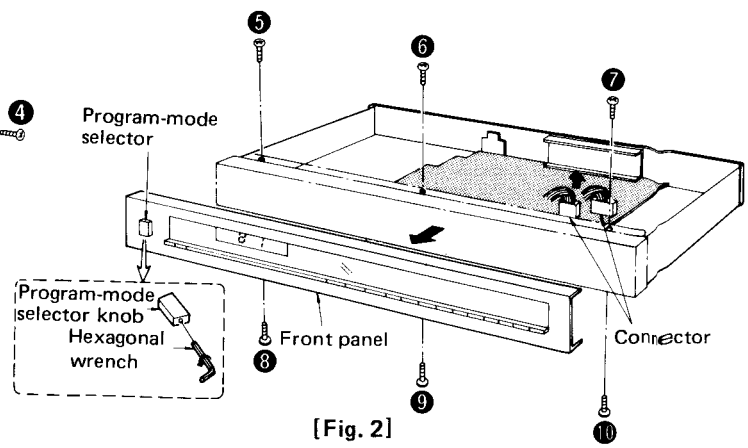
■ DISASSEMBLY INSTRUCTIONS

• How to check the printed circuit board

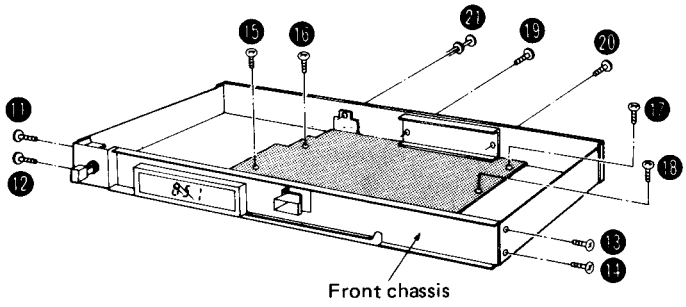
1. Remove the 4 setscrews (Fig. 1 : ❶ ~ ❹) on the side of the cabinet.
2. Remove the 2 connector. (Refer to Fig. 2)
3. Remove the program-mode selector knob use a 3-mm hexagonal wrench since the knobs are secured with 3-mm bolts. (Refer to Fig. 2)
4. Remove the 6 setscrews (Fig. 2 : ❺ ~ ❿) of the front panel.
5. Remove the font panel.
6. Remove the 4 setscrews (Fig. 3 : ⓫ ~ ⓮) on the side of the chassis.
7. Remove the 4 setscrews (Fig. 3 : ⓯ ~ ⓲) of the printed circuit board.
8. Remove the 3 setscrews (Fig. 3 : ⓳ ~ ㉑) of the antenna and output terminal plate.
9. Remove the front chassis with printed circuit board. (Refer toFig. 4)



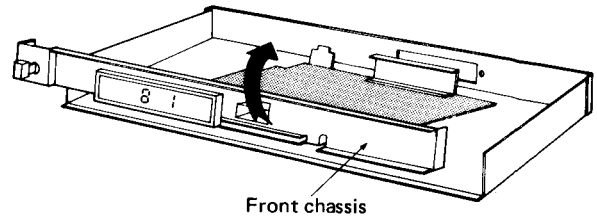
[Fig. 1]



[Fig. 2]

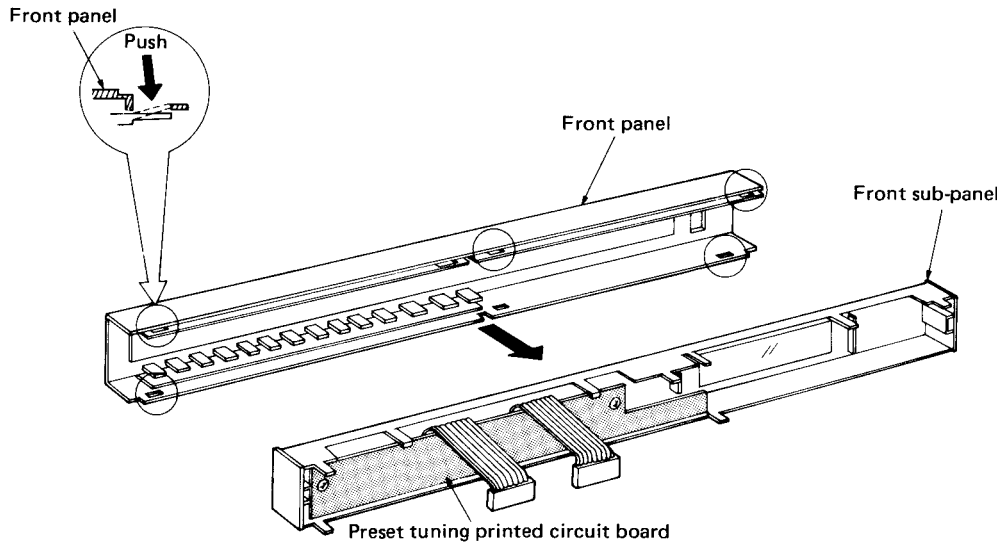


[Fig. 3]

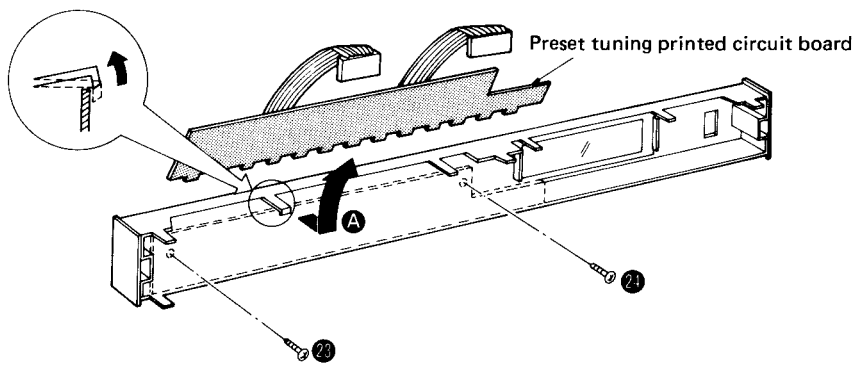


[Fig. 4]

- **How to remove the preset tuning printed circuit board.**
  1. Remove the cabinet and front panel (Refer to the procedures 1 to 5 of "How to check" for printed circuit board.)
  2. The claws projected (at 6 portions) from the front sub-panel are engaged with the front panel. Disengage the claws from by screwdriver or the like to remove the front sub-panel. (Refer to Fig. 5)
  3. Remove the 2 setscrews (Fig. 6 : ㉓ , ㉔) of the preset tuning circuit board.
  4. The claws projected (at 2 portions) from the front sub-panel.
  5. Move the preset tuning printed circuit board in the direction of arrow Ⓐ in Fig. 6.

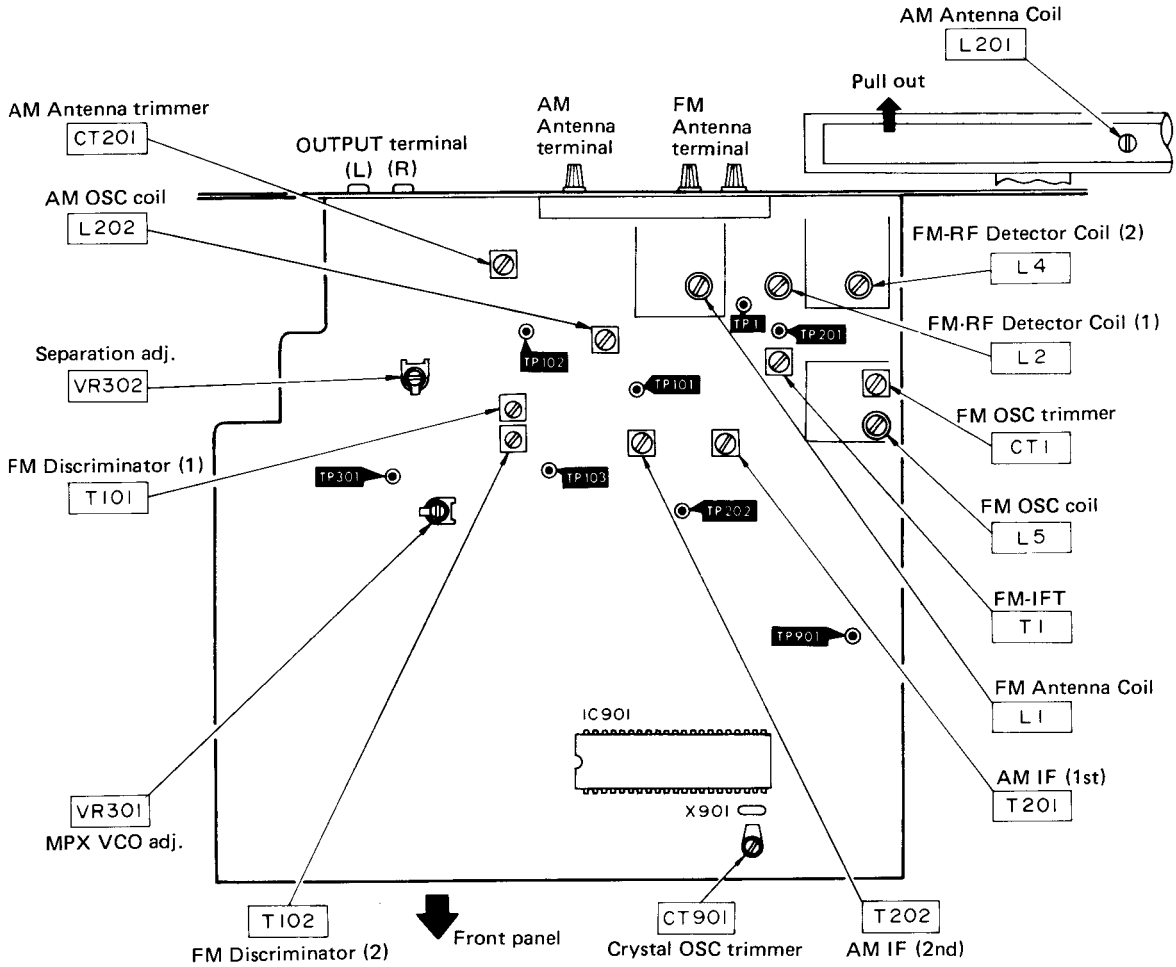


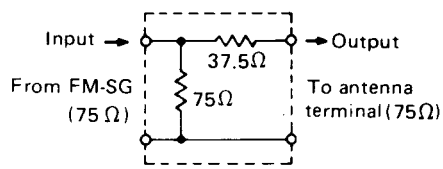
[Fig. 5]



[Fig. 6]

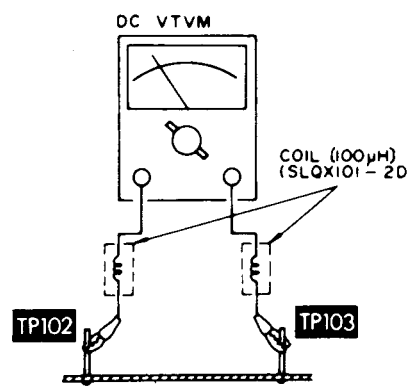
■ MEASUREMENTS AND ADJUSTMENTS



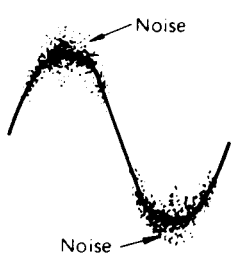


(75Ω FM dummy antenna)

[Fig. 7]
(Abb. 7)

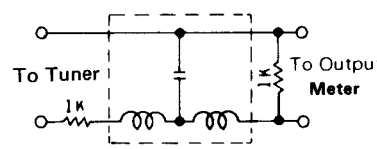


[Fig. 8]
(Abb. 8)



AF output wave form

[Fig. 9]
(Abb. 9)



Low Pass Filter
(fc=15kHz ~ 19kHz)

[Fig. 10]
(Abb. 10)

• Set FM/AM allocation selector to "FM 0.05 MHz/AM 9 kHz steps" position.

AM TUNER ADJUSTMENT

Setting and Equipment used

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Maintain line voltage at rated voltage.
4. Output of signal generator should be no higher than necessary to obtain an output reading.
5. Pull the AM ferrite-bar antenna (L201) outward.
6. Use a non-metal screwdriver for the adjustment.
7. Set broadcast selector to "AM" position.
8. Program-mode selector switch to "manual" position.

Step No.	AM SIGNAL GENERATOR CONNECTION	AM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input)	450 kHz (30% Mod. with 400 Hz)	Frequency of non-inter ference	Connect AC VTVM or scope to "OUTPUT" terminals of the set.	T201 (1st IFT) T202 (2nd IFT)	Adjust the input frequency and adjustment points so that the output becomes maximum.
	AM-RF ADJUSTMENT					
2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	522 kHz (30% Mod. with 400 Hz)	522 kHz	Connect DC VTVM to TP201 terminal.	L202 (OSC Coil)	Adjust L202 to 1.0V ± 0.05V
3		612 kHz (30% Mod. with 400 Hz)	612 kHz	Connect AC VTVM to scope to "OUTPUT" terminals of the set.	L201 (ANT Coil)	1. Adjust for maximum output. 2. Adjust ferrite core of L201 by screwdriver.
4		1503 kHz (30% Mod. with 400 Hz)	1503 kHz	Connect AC VTVM to scope to "OUTPUT" terminal of the set.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat steps (3) and (4) until the frequency correctly matches the dial display.

FM TUNER ADJUSTMENT

Equipment used

1. FM signal generator (FM-SG)
2. Stereo modulator
3. Distortion analyser
4. Oscilloscope
5. AC and DC electronic voltmeters (VTVM).
6. Frequency counter (19 kHz and 108 MHz measurable).
7. FM 75Ω dummy antenna (Fig. 7).

Preparation of FM signal generator (FM-SG)

1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
3. The standard input of the set is 60 dB (1mV), 400 Hz 100% modulation (Because of using dummy antenna, SG output must be 12 dB plus (IHF). That is, when input is 60 dB, SG output is to be 72 dB).

Setting

1. Set IF band selector to "normal" position
2. Set broadcast selector to "FM" position
3. Auto scan/FM mode switch to "off/FM mono" position.
4. Program-mode selector switch to "manual" position.

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	CRYSTAL OSC ADJUSTMENT					
5	————	No-Signal	87.5 MHz	Connect DC VTVM to TP1 terminal.	L5 (OSC coil)	Adjust L5 to 3V.
6				• Connect frequency counter to TP901 terminal. • Check the color marking of ceramic filter (CF101 ~ 104). (All 4 filters are of same color.)	CT901 (Crystal OSC Trimmer)	When blue-marked ceramic filter is used, adjust the output frequency from TP901 to 98.1752 MHz. Also, adjust the frequency to 98.225 MHz in orange-marked, and to 98.2002 MHz in red marked.

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	FM-IF ADJUSTMENT					
7	————	No-Signal	100.00 MHz	Connect DC VTVM between TP102 and TP103 through choke coil. (Refer to Fig. 8)	T101 (Discri. IFT)	Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
	FM-RF ADJUSTMENT					
8	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna.	87.50 MHz	87.50 MHz	Connect DC VTVM to TP1 terminal.	L5 (OSC Coil)	Adjust L5 (OSC Coil) to 3 ± 0.1V
9		90.00MHz (100% Mod. with 400 Hz) weak input	90.00 MHz	Connect scope to "OUTPUT" terminals of the set.	L1 (ANT Coil) L2 (RF DET Coil 1st) L4 (RF DET Coil 2nd) T1 (IFT)	1. Add weak input so that noise is included in the output wave from. 2. Make the adjustment so that the output wave form is vertically symmetrical (Refer to Fig. 9). 3. Repeat the steps (9) and (10) until the frequency correctly matches the broadcasts frequency display.
10		106. 00 MHz (100% Mod. with 400 Hz	106.00 MHz	Connect scope to "OUTPUT" terminals of the set.	CT1 (OSC Trimmer)	
	FM MONO DISTORTION ADJUSTMENT					
11	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna.	100.00 MHz (100% Mod. with 400Hz)	100.00 MHz	* Connect DC VTVM between TP102 and TP103 through choke coil. (Refer to Fig. 8) * Connect distortion analyser to "OUTPUT" terminal of the set.	T101 (Discri. IFT) T102 (Discri. IFT)	1. Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range. 2. Adjust T102 core so that distortion of right and left channels are minimized.
	FM MPX PILOT (VCO) ADJUSTMENT					
12	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Monaural signal)	100.00 MHz (Non-modulated)	100.00 MHz	Connect frequency counter (through 100kΩ) to TP301 terminal.	VR301 (VCO)	1. Set the auto scan/FM mode switch to "on/FM auto". 2. Adjust VR301 to 19 kHz ± 30 Hz.
	STEREO DISTORTION ADJUSTMENT					
13	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.00 MHz (100% Mod. with 400 Hz) (L mode)	100.00 MHz	Connect distortion analyser to "OUTPUT" terminals of the set through low-pass filter. (fc= 15 kHz ~ 19 kHz) (Fig. 10)	T1 (IFT)	1. Set the auto scan/FM mode switch to "on/FM auto". 2. Re-adjust T1 within ±90° from the preset core position so that the distortion of L ch is minimized. 3. Re-check the steps 7, 9, 10 and 11
	SEPARATION ADJUSTMENT					
14	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.00MHz (100% Mod. with 1 kHz) (L or R mode)	100.00 MHz	Connect AC VTVM to "OUTPUT" terminals of the set through low-pass filter (fc = 15 kHz ~ 19 kHz) (Fig. 10)	VR302 (Separation)	1. Set the auto scan/FM mode switch to "on/FM auto". 2. Adjust VR302 so that R output is minimized when stereo modulator is in L (L ch modulation) mode and that L output is minimized in R mode.

■ MESSUNGEN UND JUSTIERUNGEN ■■■■ Deutsch ■■■■■■■■■■■■■■■■■■■■

• FM/AM Wellenverteilungs-Wahlschalter auf Position "FM 0.05 MHz/AM 9 kHz" stellen.

AM (MW)-EINSTELLUNG

Stellungen und zu benutzende Geräte

1. Elektonische Voltmeter für Wechsel- und Gleichstrom (VTVM)
2. AM-(MW)-Meßsender (AM-SG)
3. Netzspannung auf ihren Sollwerthalten.
4. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
5. Die AM-Ferritsabantenne (L201) herausziehen.
6. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.
7. Bereichsschalter . . . . AM
8. Den Programm-Betriebsart-Wahlschalter auf "manual" einstellen.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	AM (MW)-ZF-ABGLEICH					
1	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Starker Eingang)	450 kHz (400 Hz Modulat. 30%)	Kein Empfang	Oszilloskop oder Wech-selstrom-Voltmeter über den Ausgang "OUTPUT".	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adjustie-ren, daß der Ausgang den maximalen Wert erreicht.
	AM (MW)-HF-ABGLEICH					
2	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	522 kHz (400 Hz Modulat., 30%)	522 kHz	Zwischen TP201 und Erdung Gelichstrom-Voltmeter schließen.	L202 (Osc. Spule)	L202 so justieren, daß die vom Gleichstrom-Voltmeter gemessene. (1.0V ±0.05V)
3		612 kHz (400 Hz Modulat., 30%)	612 kHz	Oszilloskop oder Wech-selstrom-Voltmeter über den Ausgang "OUTPUT" schließen.	L201 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
4		1503 kHz (400 Hz Modulat., 30%)	1503 kHz	Oszilloskop oder Wech-selstrom-Voltmeter über den Ausgang "OUTPUT"schließen.	CT201 (Ant. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (3) und (4) wied-erholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.

FM (UKW)-EINSTELLUNG

Verwendete Einrichtungen

1. UKW-Meßsender (FM-SG)
2. Stereo-Modulator (oder Trennmesser)
3. Verzerrungsmesser
4. Oszilloskop
5. Elektronische Voltmeter für Wechsel-und Gleichstrom (VTVM)
6. Signalfrequenzmesser (meßar für 19 kHz und 108 MHz)
7. UKW 75-Ohm Kunstantenne (Abb. 7)

Vorbereitung AM UKW-Messender (FM-SG)

1. Stereo-Modulator an FM-SG anschließen.
2. SG-Ausgang über 300-Ohm UKW Kunstantenne an den Antennen-eingang des Gerätes schließen.
3. Der normale Eingang des Gerätes beträt 60 dB (1mV), 400 Hz 100% Modulation. (Wegen Verwendung der Kunstantenne muß der Signalausgang 12 dB plus (IHF) sein: d.h. beim Eingang von 60 dB soll der Signalausgang 72 dB sein.)

Zustand des Gerätes

1. Den UKW-Antennenwahlschalter auf die "normal"-Stellung bringen.
2. Den Eingangswähler auf die "FM"-Position stellen.
3. Sendersuchlauf-/UKW-Betriebsartenschalter auf "off/FM mono" einstellen.
4. Den Programm-Betriebsart-Wahlschalter auf "manual" einstellen.

Nr.	FM-MESSENDER ANSCHLUSS	FM-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	KRISTALLSCHWINGEREINSTELLUNG					
5	———	Kein Signal	87.5 MHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	L5 (Osc. Spule)	L5 so justieren, daß die vom Gleichstrom-Voltmeter gemes-sene Spannung 3V. beträgt.
6				• Signal frequenzmesser an TP901 schließen. • Die Farbmarkierung der keramischen Filter (CF101 ~ 104) über-Prüfen. (Alle vier Filter haben) die gleiche Farbe.	CT901 (Kristallschwinger-trimmer	Wenn blaue keramische Filter benutzt werden, die Ausgangs-frequenz von TP901 auf 98.1752MHz, bei roten Filtern, die Frequenz auf 98.252MHz und die roten Filter, die Frequenz auf 98.200MHz einstellen.

Nr.	FM (UKW) MESSENDER ANSCHLUSS	FM (UKW) MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	UKW-ZF-ABGLEICH					
7	————	Kein Signal	100.00 MHz	Ein Gleichstromröhren-voltmeter zwischen TP102 und TP103 über eine Drosselspule verbinden. (Siehe Abb. 8)	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF-ABGLEICH					
8	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87.50 MHz	87.50 MHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	L5 (Osc. Spule)	L5 so justieren, daß die vom Gleichstrom-Voltmeter gemessene Spannung 3V ± 0.1V beträgt.
9		90.00 MHz (400 Hz Modulat., 100%)	90.00 MHz	Oszilloskop über den Ausgang "OUTPUT" schließen.	L2 (HF Det. Spule 1) L4 (HF Det. Spule 2) L1 (Ant. Spule) T1 (IFT)	1. Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, diß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 9) 3. Die Einstellung von (9) und (10) wiederholen, bis die Frequenz mit der Skala übereinstimmt.
10		106.00 MHz (400 Hz Modulat., 100%)	106.00 MHz	Oszilloskop über den Ausgang "OUTPUT" schließen.	CT1 (Osc. Trimmer)	
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
11	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100.00 MHz (400 Hz Modulat., 100%)	100.00 MHz	• Ein Gleichstromröhren-voltmeter zwischen TP102 und TP103 über eine Drosselspule verbinden. (Abb. 8) • Verzerrungsmesser an rechten und linken kanäle Ausgangs-klemmer "OUTPUT"	T101 (Diskriminator FT) T102 (Diskriminator FT)	1. Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt. 2. T102 Kern für minimale Verzerrung der rechten und linken Kanäle justieren.
	UKW-MPX-PILOTABGLEICH (VCO)					
12	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (Mono-Signal)	100.00 MHz (Un-modulierte Welle)	100.00 MHz	Signal frequenzmesser an TP301 schließen. (durch 100kΩ)	VR301 (VCO)	1. Sendersuchlauf-/UKW-Betriebsartenschalter. auf "on/FM auto"einstellen. 2. VR301 so abgleichen, daß Ausgangsfrequnz von TP301 19 kHz ± 30 Hz.
	STEREO-VERZERRUNGSABGLEICH					
13	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.00 MHz (400 Hz Modulat., 100%) L-Betriebsart	100.00MHz	Tiefpaßfilter (fc = 15 ~ 19 kHz) über Verzerrungs-messer an Ausg-angsklemme "OUTPUT" des Gerätes schließen. (Abb. 10)	T1 (IFT)	1. Sendersuchlauf-/UKW-Betriebsartenschalter auf "on/FM auto" einstellen. 2. Den schon eingestellten T1 erneut, innerhalb von ±90° von der voreingestellten Kernposition einstellen, sodaß die Verzerrung des linken Kanals minimalisiert wird. 3. Die Schritte 7, 9, 10 und 11 noch einmal überprüfen.
		TRENNUNG-ABGLEICH				
14	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.00 MHz (400 Hz Modulat., 100%) L-order R-Betriebsart	100.00 MHz	Tiefpaßfilter (fc = 15 ~ 19 kHz) über Wechselstrom-voltmeter an Ausg-angsklemme "OUTPUT" des Gerätes schließen. (Abb. 10)	VR302	1. Sendersuchauf-/UKW-Betriebsartenschalter auf "on/FM auto" einstellen. 2. VR302 auf minimale Anzeige des R-Ausgans bei Stereo-modulator in L (L-Kanal-modulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.

■ MESURAGES ET RÉGLAGES — Francais

• Régler le sélecteur d'attribution FM/AM sur la position "FM 0.05MHz/AM 9kHz".

REGLAGE DE AM

Réglage et équement utilisé
1. Voltmétres électronique de courant altèrnatif et de courant continu (VTVM)
2. Générateur du signal AM (AM-SG)
3. Conservel la tension du secteur à la tension nominale.
4. Le signal du générateur ne doit pas étre plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
5. Retirer l'antenna à tige de ferrite (L201) de la modulation d'amplitude.
6. Utiliser un tournevis non-métallique pour la réglage.
7. Sélecteur de gamme . . . . . AM
8. Placer le sélecteur de mode de programme sur la position "manual"

No.	AM GENERATEUR BRANCHEMENT	AM GENERATEUR FREQUENCE	FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	REGLAGE DE FI-AM					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée sous puissante)	450kHz (modulé à 30% par 400 Hz)	Point sans signal	C.A. Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	T201 (1 transfo F1) T202 (2 transfo F1)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
	REGLAGE DE RF-AM					
2	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	522 kHz (modulé à 30% par 400 Hz)	522 kHz	Brancher le voltmètre à courant continu entre TP201 et la prise de terre.	L202 (Bobine Osc.)	Régler L202 de telle sorte que le voltage mesuré par la voltmètre à courant continu, soit de 1.0V ± 0.05V.
3		612 kHz (modulé à 30% par 400 Hz)	612 kHz	C.A. Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L201 (Bobine Ant.)	1. Régler au maximum de signal de sortie. 2. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
4		1503 kHz (modulé à 30% par 400 Hz)	1503 kHz	C.A. Voltmètre électronique ou oscilloscope sur prise de sortie de l'appariel.	CT201 (Trimmer Ant.)	1. Régler au maximum de signal de sortie. 2. Refaire les étapes (3) et (4) jusqu'à ce que le fréquence s'aligne correctement avec l'affichage du cadran.

REGLAGE DE FM

Equipment utililisé
1. Générateur du signal FM (FM-SG)
2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
3. Jauge de distorsion.
4. Oscilloscope.
5. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
6. Compteur de fréquence (19kHz et 108MHz mesurable).
7. Antenne fictive FM, 75 ohms (Fig. 7)

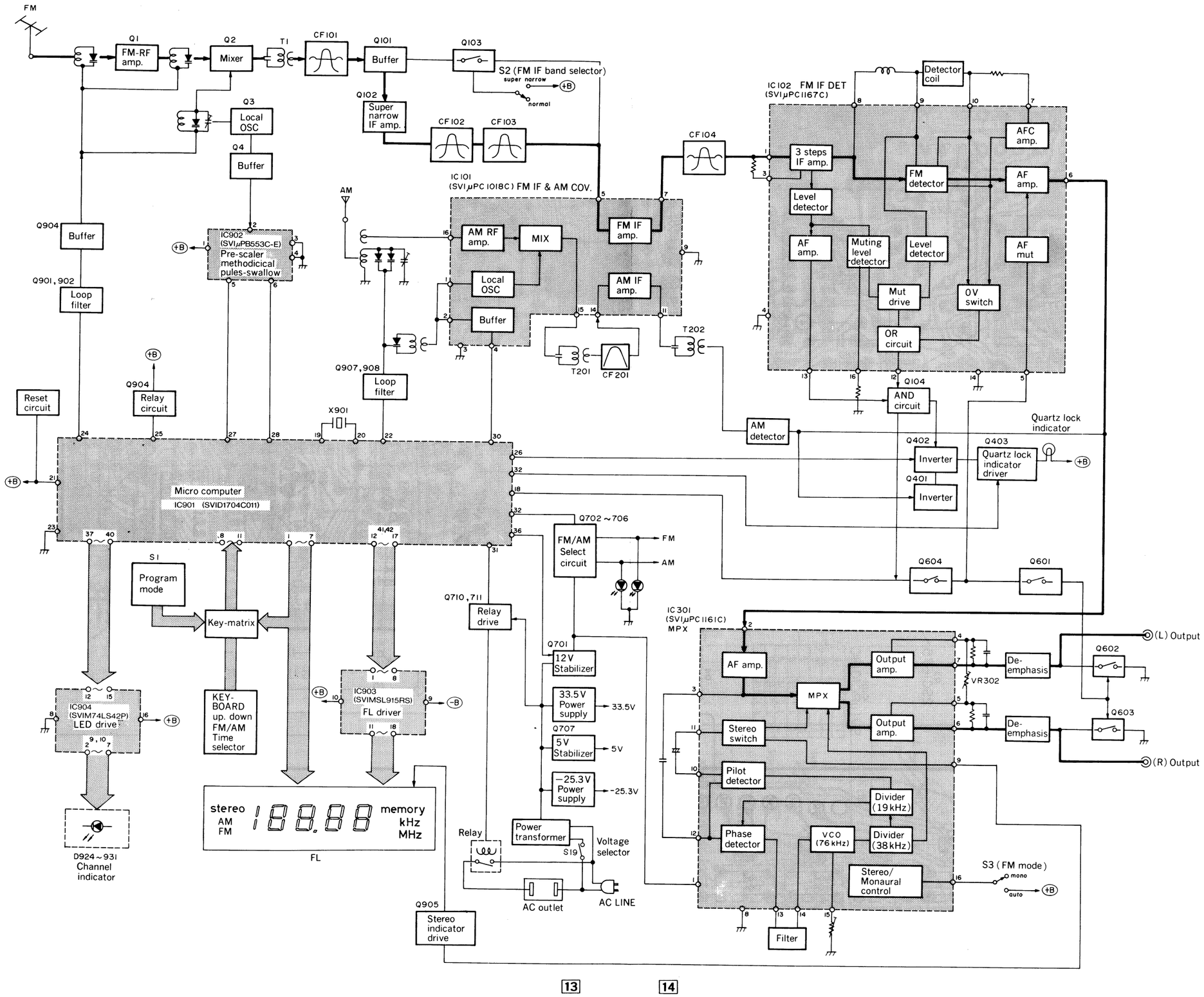
Préparation du générateur de signal FM (FM-SG)
1. Brancher la commande de réglage stéréophonique à FM-SG.
2. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM, 300 ohms.
3. L'entrée standard de l'appareil est de 60 dB (1 mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenne fictive, la sortie SG doit être de plus 12 dB (IHF). Ce qui signifie que guand l'entrée est de 60 dB, la sortie SG doit être de 72 dB.)

Conditions de l'appareil
1. Placer le sélecteur de l'antenne FM sur la position "normal".
2. Sélecteur d'entrée sur la position "FM".
3. Sélecteur de mode "automatic-san/FM mode" . . . . off/FM mono.
4. Placer le sélecteur de mode de programme sur la position "manual".

	FM GENERATEUR BRANCHEMENT	FM GENERATEUR FREQUENCE	FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
5				Brancher le voltmètre à courant continu entre TP1 et la prise de terre.	L5 (Bobin Osc.)	Régler L5 de telle sorte que le voltage mesuré par le voltmètre à courant continu soit de 3V.
6	———	Sans Signal	87.5 MHz	• Brancher le compteur de fréquence entre TP901 et la prise de terre. • Vérifier la couleur de filtes céramiques (CF101 à CF104) Les quotre filtres sont de la mâme couleur.	CT901 (Trimmer de l'osc à cristal)	Quand un filtre céramique marqué en bleu est utilise, régler la fréquence de sortie de TP901 à 98.175MHz. Régler aussi la frequence des filtres oranges à 98.2552MHz et des filtres rouges à 98.2002MHz.

No.	FM GENERATEUR BRANCHEMENT	FM GENERATEUR FREQUENCE	FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	REGLAGE DE FI-FM					
7	———	Sans Signal	100.00 MHz	Brancher le voltmètre électronique a.c.c. aux bornes TP102 et TP103 (Voir la Fig. 8)	T101 (Transfor FI discri.)	Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	REGLAGE DE RF-FM					
8	Branchez sur la prise d'antenne FM à traves une antenne fictive FM	87.50 MHz	87.50 MHz	Brancher le voltmètre à courant continu entre TP1 et la prise de terre.	L5 (Bobine Osc.)	Régler L5 de telle sorte que le voltage mesuré par le voltmètre à courant continu soit de 3 ± 0.1V.
9		90.00 MHz (modulé à 100% par 400 Hz)	90.00 MHz	Oscilloscope sur prise de sortie du tuner.	L2 (1er détecteur) L4 (2e détecteur) L1 (Bobin Ant.) T1 (IFT)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que la forme de l'onde de sortie soit verticalement symétrique. (Voir Fig. 9) 3. Refaire les réglages (9) et (10) jusqu'à ce que la fréquence corresponde correctement avec l'échells du cadran.
10		106.00 MHz (modulé à 100% par 400 Hz)	106.00 MHz	Oscilloscope sur prise de sortie du tuner.	CT1 (Trimmer Osc.)	
	REGLAGE DE LA DISTORSION FM EN MONO					
11	Branchez sur la prise d'antenne FM à traves une antenne fictive FM	100.00 MHz (modulé à 100% par 400 Hz)	100.00 MHz	• Brancher le voltmètre électronique a.c.c. aux bornes TP102 et TP103. (Voir la Fig. 8) • Brancer le compteur de distorsion à la borne de sortie (OUTPUT) du canal gauche et droit de l'appareil.	T101 (Transfo FI discri.) T102 (Transfo FI discri.)	1. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV. 2. Régler le noyau T102 de telle sorte que la distrosion des canaux droit et gauche soit la puls faible
	REGLAGE (VCO) PILOTE MULTIPLEX FM					
12	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal monoscoustique)	100.00 MHz (Non modulé)	100.00 MHz	Brancher le compteur de fréquence à TP302 (Par l'intermédiaire de 100kΩ)	VR301	1. Sélecteur de mode "automaticscan/FM". . . on/FM auto. 2. Régler VR301 de telle sortie que la fréquence de sortie de TP301 soit de 19 kHz. ± 30Hz.
	REGLAGE DE LA DISTORSION STEREO					
13	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation	100.00 MHz (modulé à 100% par 400 Hz) (Mode G)	100.00 MHz	Brancher le filter passe-bas (fc = 15 ~ 19 kHz) à la borne de sortie (OUTPUT) de l'appareil par un compteur de distortion. (Fig. 10)	T1	1. Sélecteur de mode "automaticscan/FM". . . on/FM auto. 2. Rerégler le T101 déjà réglé. à ± 90% de la position préréglée du noyau de telle sorte que la distorsion du canal gauche soit minimale. 3. Revérifier les étapes 7, 9, 10 et 11.
	REGLAGE DE LA SEPARATION DES CANAUX					
14	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.00 MHz (modulé à 100% par 400 Hz) (Mode G ou D.)	100.00 MHz	Brancher le filter passe-bas (fc = 15 ~ 19 kHz) à la borne de sortie (OUTPUT) de l'appareil par un voltmètre à courant alternatif. (Fig. 10)	VR302	1. Sélecteur de mode "automaticscan/FM". . . on/FM auto. 2. Régler VR302 de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.

■ BLOCK DIAGRAM



■ REPLACEMENT PARTS LIST ..... (Electric Parts)

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		RVIUPC1018CF	IC, FM IF/AM RF Amplifier and AM Converter
IC102		SVIUPC1167C2	IC, FM IF Detector
IC301		SVIUPC1161C	IC, FM Multiplex
IC901		SVID1704C011	IC, Micro-Computer
IC902		SVIUPB553AC	IC, Pre-Scaler
IC903		SVIMSL915RS	IC, FL Driver
IC904		SVIM74LS42P	IC, LED Driver
TRANSISTORS			
Q1		2SK195–H2	Transistor, FM RF Amplifier
Q2		**2SC1674–M**	Transistor, FM Mixer
Q3, 4, 101, 102		**2SC1675–L**	Transistor, FM Oscillator and Buffer IF Amplifier
Q103, 601, 702, 703, 706, 904, 905		**2SA733–P1**	Transistor, Switching and Muting
Q104, 401 ~ 403, 602 ~ 604, 704, 705, 708, 709, 711, 901 ~903, 907, 908, 961		**2SC945–Q**	Transistor, Switching, Quartz Lock IND and Loop Filter
Q701		2SD882–P	Transistor, Regulator
Q707		2SC1815–Y	Transistor,
Q981, 982		2SC1684–R	Transistor,
DIODES			
D1 ~ 4		MA320G1–N	Diode, Variable Capacitor (for FM)
D101 ~103, 203, 204, 301, 401 ~ 403, 601, 602, 705, 711, 712, 903 ~ 923, 935, 982		**MA162A**	Diode, Switching
D210		SVDBB312E	Diode, Variable Capacitor (for AM)
D202, 934		**20A90**	Diode, Switching
D701 ~704	⚠	**SVDSR1K2**	Rectifier
D707		SVDMZ307A	Diode, 7V Zener
D708		SVDMZ306C	Diode, 6V Zener
D709		**SVDEQA0113RA**	Diode, 13V Zener
D710		SVDMZ333A	Diode, 33V Zener
D901, 902		**MA162A**	Diode, Switching
D924~ 933		SVDGL–9PR4	Light Emitting Diode, Red
D981		SVDMZ303A	Diode, 3V Zener
COIL and TRANSFORMERS			
L1		SLA4P55–P	Coil, FM Antenna
L2		SLD4P53–P	Coil, FM Detector
L3		RLQY15G5–Y	Coil, Choke
L4		SLD4P43	Coil, FM Detector
L5		SLO4N21	Coil, FM Local Oscillator
L101		SLQX101–3M	Coil, Choke
L201		SLF2C33–1	Coil, AM Bar Antenna
L202		SLO2C29–P	Coil, AM Local Oscillator
L301		SLM1C61–P	Coil
T1		SLI4C109	Transformer, FM IF
T101		SLI4C529–Z	Transformer, FM Discriminator
T102		SLI4C531–Z	Transformer, FM Discriminator
T201		SLI2C127	Transformer, AM IF
T202		SLI2C413	Transformer, AM IF
T701	⚠	SLT5J121–1W	Transformer, Power Source

Ref. No.		Part No.	Part Name & Description
CERAMIC FILTERS			
CF101, 104		SVFE107MM–A	Ceramic Filter, FM 10.7MHz, Red
		SVFE107MM–B	Ceramic Filter, FM 10.68MHz, Blue
		SVFE107MM–C	Ceramic Filter, FM 10.72MHz, Orange
CF102, 103		SVFE107MZ2–A	Ceramic Filter, FM 10.7MHz, Red
		SVFE107MZ2–B	Ceramic Filter, FM 10.675MHz, Blue
		SVFE107MZ2–C	Ceramic Filter, FM 10.725MHz, Orange (Use pair rands as same as CF101, CF103, and CF104)
CF201		SVFSFP450HT	Ceramic Filter, AM 450kHz
CRYSTAL			
X901		SVQ43U452	Crystal, 4.5MHz Counter Oscillator
FLUORESCENT DISPLAY TUBE			
FL		SAD7MT09UZA	Fluorescent Display Tube
VARIABLE RESISTORS			
VR301		**EVTS3MA00B53**	VCO Adjustment 5kΩ (B)
VR302		**EVTS3MA00B55**	Separation Adjustment, 500kΩ (B)
VARIABLE CAPACITORS			
CT1		SVCTY121B269	Trimmer, FM Local Oscillator
CT201		SVCTY122D221	Trimmer, AM Antenna
CT901		ECVIZW06X32E	Trimmer, Crystal Oscillator
COMPONENT COMBINATIONS			
Z101		EXRP103P471T	Component Combination, 0.01μF, 470Ω
Z201		EXRP203Z104T	Component Combination, 0.02μF, 100kΩ
Z301, 302		EXRP181K473T	Component Combination, 180pF, 470kΩ
Z901		EXBP87104K	Component Combination, 100kΩ (x 7)
Z902		EXFP7331MW	Component Combination, 330pF, (x 7)
LAMP			
PL401	⚠	XAMR38S200B	Lamp, Quartz Lock 40mA (6.3V)
FUSE			
F1	⚠	XBA2C08TR0	Fuse, T800mA (250V)
SWITCHES			
S1		SSR93–1	Switch, Program Mode
S2, 3		SSH2007	Switch, FM IF Selector, FM Mode
S4 ~ 17		SSG7	Switch, Memory, Tuning Preset, Mode FM Signal Strength, Power
S18		ESD14116	Switch, AM Allocation Selection
S19	⚠	ESE372	Switch, Voltage Adjustment
LIQUID ELECTROLYTE DOUDIE LAYER CAPACITOR			
C914 ~ 916		EECW1R8A3R3S	Liquid Electrolyte Double Layer 1.8V, 3.3F

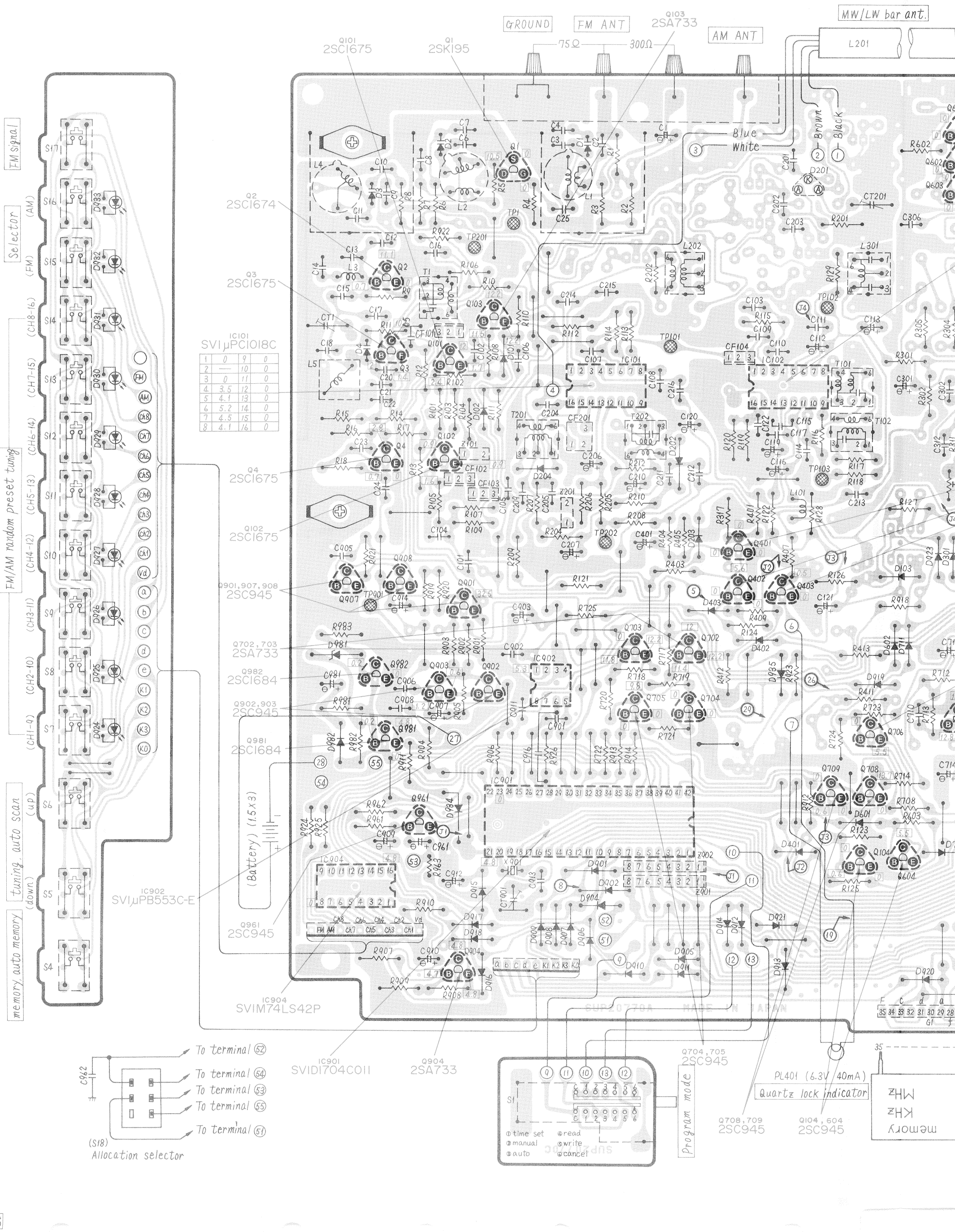
Ref. No.		Part No.	Part Name & Description
RELAY			
RLY701	⚠	SSY81	Relay, AC Outlet
RESISTORS			
R1		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R2		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ± 5%
R3, 4		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R5		**ERD25FJ100**	Carbon, 1/4W, 10Ω, ± 5%
R6		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R7		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R8		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R9		**ERD25TJ474**	Carbon, 1/4W, 470kΩ, ± 5%
R10		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R11		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R12		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R13		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R14		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R15		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R16		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ± 5%
R17		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ± 5%
R18		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R101		**ERD25FJ392**	Carbon, 1/4W, 3.9kΩ, ± 5%
R102		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R103		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ± 5%
R104		**ERD25FJ182**	Carbon, 1/4W, 1.8kΩ, ± 5%
R105		**ERD25FJ681**	Carbon, 1/4W, 680Ω, ± 5%
R106		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ± 5%
R107		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R108, 109		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ± 5%
R110		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ± 5%
R111		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ± 5%
R112		**ERD25FJ561**	Carbon, 1/4W, 560Ω, ± 5%
R113		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R114, 115		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ± 5%
R116		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ± 5%
R117		**ERD25FJ182**	Carbon, 1/4W, 1.8kΩ, ± 5%
R118		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ± 5%
R119		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ± 5%
R120		**ERD25TJ274**	Carbon, 1/4W, 270kΩ, ± 5%
R121		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ± 5%
R122		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ± 5%
R123, 124		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ± 5%
R125		**ERD25TJ563**	Carbon, 1/4W, 56kΩ, ± 5%
R126		**ERD25TJ105**	Carbon, 1/4W, 1MΩ, ± 5%
R127		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ± 5%
R128		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R129		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ± 5%
R201		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R202		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R204, 205		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R206		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R207		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ± 5%
R208		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ± 5%
R209		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ± 5%
R210		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ± 5%
R212		**ERD25FJ470**	Carbon, 1/4W, 47Ω, ± 5%
R301		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ± 5%
R302		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R303		**ERD25TJ184**	Carbon, 1/4W, 180kΩ, ± 5%
R304, 305		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R310		**ERD25TJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R311		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ± 5%
R312	⚠	**ERD50FJ470**	Carbon, 1/2W, 47Ω, ± 5%
R313, 314		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ± 5%
R315, 316		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ± 5%
R317		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R319		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R320		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ± 5%
R401		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ± 5%

Ref. No.		Part No.	Part Name & Description
R403		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ± 5%
R404		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ± 5%
R405		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ± 5%
R407		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ± 5%
R409		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R411		**ERD50FJ820**	Carbon, 1/4W, 82Ω, ± 5%
R412		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ± 5%
R413		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R601		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R602		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R603		**ERD25TJ563**	Carbon, 1/4W, 56kΩ, ± 5%
R606		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R701	⚠	**ERD12FJ101**	Carbon, 1/2W, 100Ω, ± 5%
R702	⚠	**ERD50FJ471**	Carbon, 1/2W, 470Ω, ± 5%
R703, 704		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R705		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R706		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ± 5%
R708		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R709	⚠	ERQ12HJ330	Fuse Type Metallic, 1/2W, 33Ω, ± 5%
R710		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ± 5%
R711		**ERD25FJ2R2**	Carbon, 1/4W, 2.2Ω, ± 5%
R712, 713		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ± 5%
R714		**ERD25FJ470**	Carbon, 1/4W, 47Ω, ± 5%
R715	⚠	**ERD50FJ102**	Carbon, 1/2W, 1kΩ, ± 5%
R717, 718		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ± 5%
R719, 720		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R721		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R722		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ± 5%
R723, 724		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ± 5%
R725		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ± 5%
R901		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ± 5%
R902		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R903		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ± 5%
R904		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R905		**ERD25FJ561**	Carbon, 1/4W, 560Ω, ± 5%
R906		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R907		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ± 5%
R908		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ± 5%
R909		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ± 5%
R910		**ERD25FJ271**	Carbon, 1/4W, 270Ω, ± 5%
R911		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ± 5%
R912, 913		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R914		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ± 5%
R915		**ERD25TJ683**	Carbon, 1/4W, 68kΩ, ± 5%
R916, 917		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R918		**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ± 5%
R919		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ± 5%
R920		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ± 5%
R921		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ± 5%
R922		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ± 5%
R923		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ± 5%
R924, 925		**ERD25FJ122**	Carbon, 1/4W, 1.2kΩ, ± 5%
R926		**ERD25TJ184**	Carbon, 1/4W, 180kΩ, ± 5%
R961		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R962		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ± 5%
R963		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ± 5%
R981		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
R982		**ERD25TJ563**	Carbon, 1/4W, 56kΩ, ± 5%
R983		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%
CAPACITORS			
C1		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C2		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C3		ECCD1H050CC	Ceramic, 50V, 5pF, ±0.25pF
C4		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80% −20%
C5		ECKD1H102MD	Ceramic, 50V, 0.001μF, ±20%
C6		ECCD1H070DC	Ceramic, 50V, 7pF, ±0.5pF
C7, 8		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80% −20%
C9		ECCD1H0R5CC	Ceramic, 50V, 0.5μF, ±0.25pF
C10		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80% −20%
C11		ECCD1H070DC	Ceramic, 50V, 7pF, ±0.5pF

Continued on page 23

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines



MW/LW bar ant.

L201

OUTPUT

Q601
2SA733

Q602,603
2SC945

IC102
SVIμPC1167C2

1	2.3	9	6.0
2	2.3	10	6.0
3	2.3	11	12.0
4	0	12	0
5	0	13	3.5
6	6.0	14	0
7	6.0	15	0.4
8	6.0	16	5.8

IC301
SVIμPC1161C

1	11.1	9	6.9
2	2.6	10	2.6
3	5.9	11	2.6
4	8.9	12	2.6
5	8.9	13	2.6
6	3.8	14	2.6
7	3.8	15	3.6
8	0	16	0.1

Power transformer

(T701)

Red

Yellow

Brown

Orange

Blue

Black

(S19)

Voltage selector

Yellow

Orange

Blue

White

White

AC outlet

Q401 ~ 403
2SC945

AC 110/120/220/240V
(50/60Hz)

Green

Brown

Green/
Yellow

Blue

RLY701

Q706
2SA733

Q701
2SD882

Q707
2SC1815

Q710
2SA733

Blue

Blue

F1 800m A

Q711
2SC945

To terminal (26)

To terminal (29)

To terminal (5)

S2
Super narrow
normal

S3
mono
auto

To terminal (25)

To terminal (19)

To terminal (8)

Q905
2SA733

FM IF band

FM mode

IC903
SVIMSL915RS

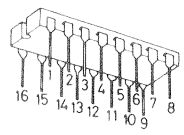
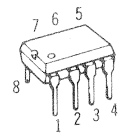
35

mA)

cator

memory
KHz
MHz
stereo
AM
FM

- **Terminal guide of transistors, diodes and IC's**

SVIμPC1018C SVIμPC1167C2 SVIμPC1161C SVIM74LS42P	SVIμPB553C-E
	
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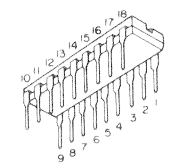
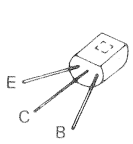
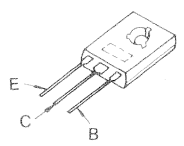
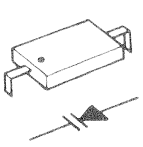
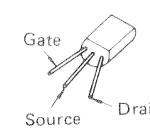
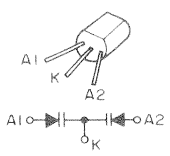
	
2SD882	MA320GIN
	
2SK195	SVDBB312
	
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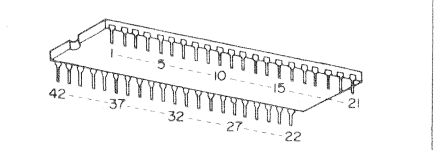
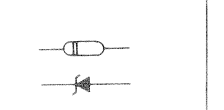
	
SVDMZ□□□□	
	

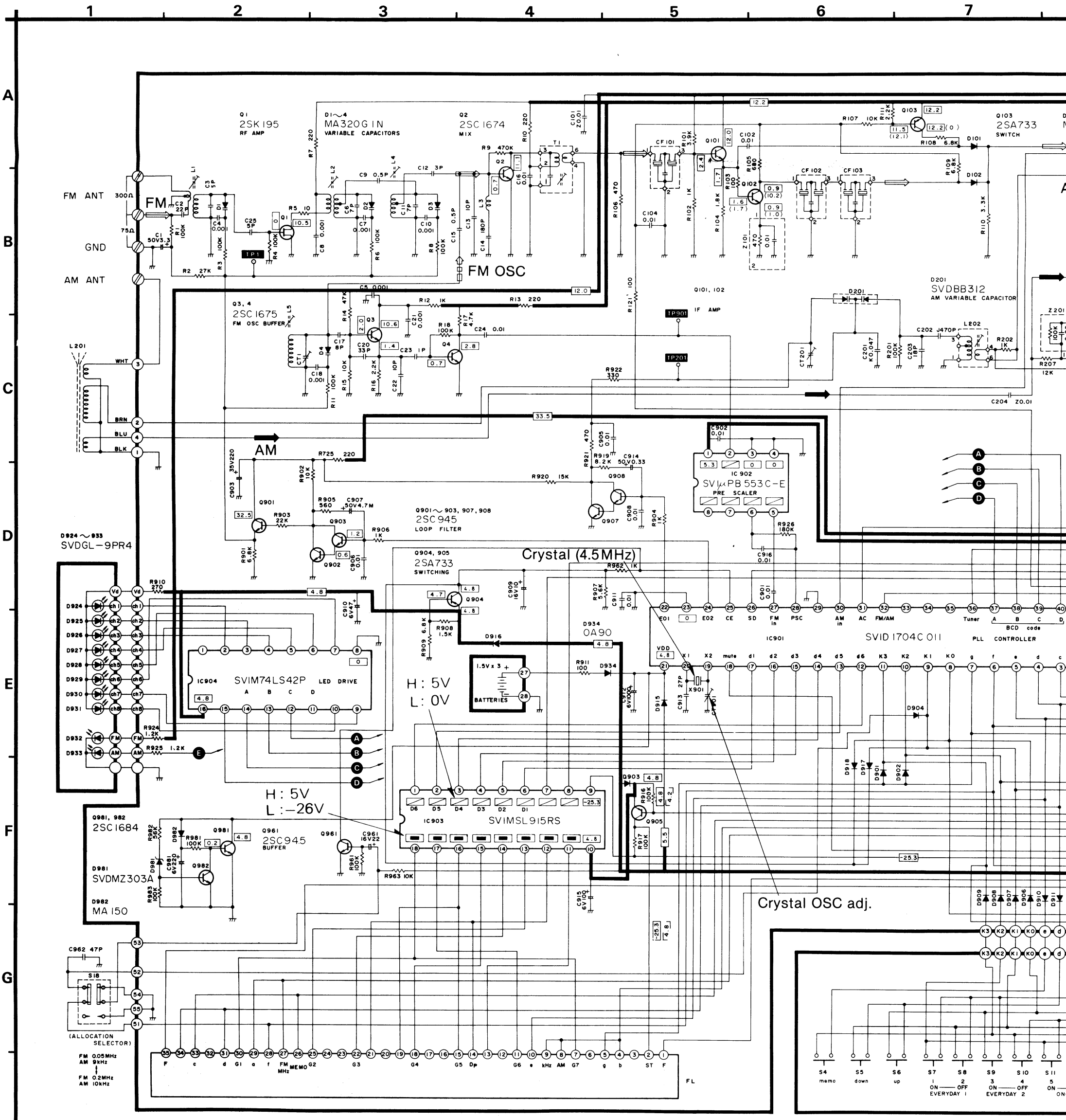
■ PRECAUTIONS

- **Ceramic filters (CF10**

  The ceramic filters for F
  be sure to use ceramic filt
  Since the ceramic filters
  D902) and the crystal ac
  the rank of ceramic filter

■ SCHEMATIC DIAGRAM (This schematic diagram may be modified at any time with the development of new technology.)

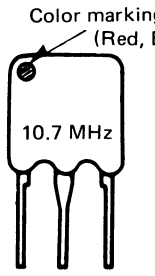
..... MODEL **ST-S4T**



CAUTIONS FOR REPAIR

filters (CF101 ~ CF104)

mic filters for FM-IF circuit are available in 3 ranks. In this set, use ceramic filters of the same rank in pair.
ceramic filters are different in rank, the use of diodes (D901, d the crystal adjusting frequency must vary in accordance with f ceramic filter. (Refer to "Crystal Osc Adjustment" on page 7.)

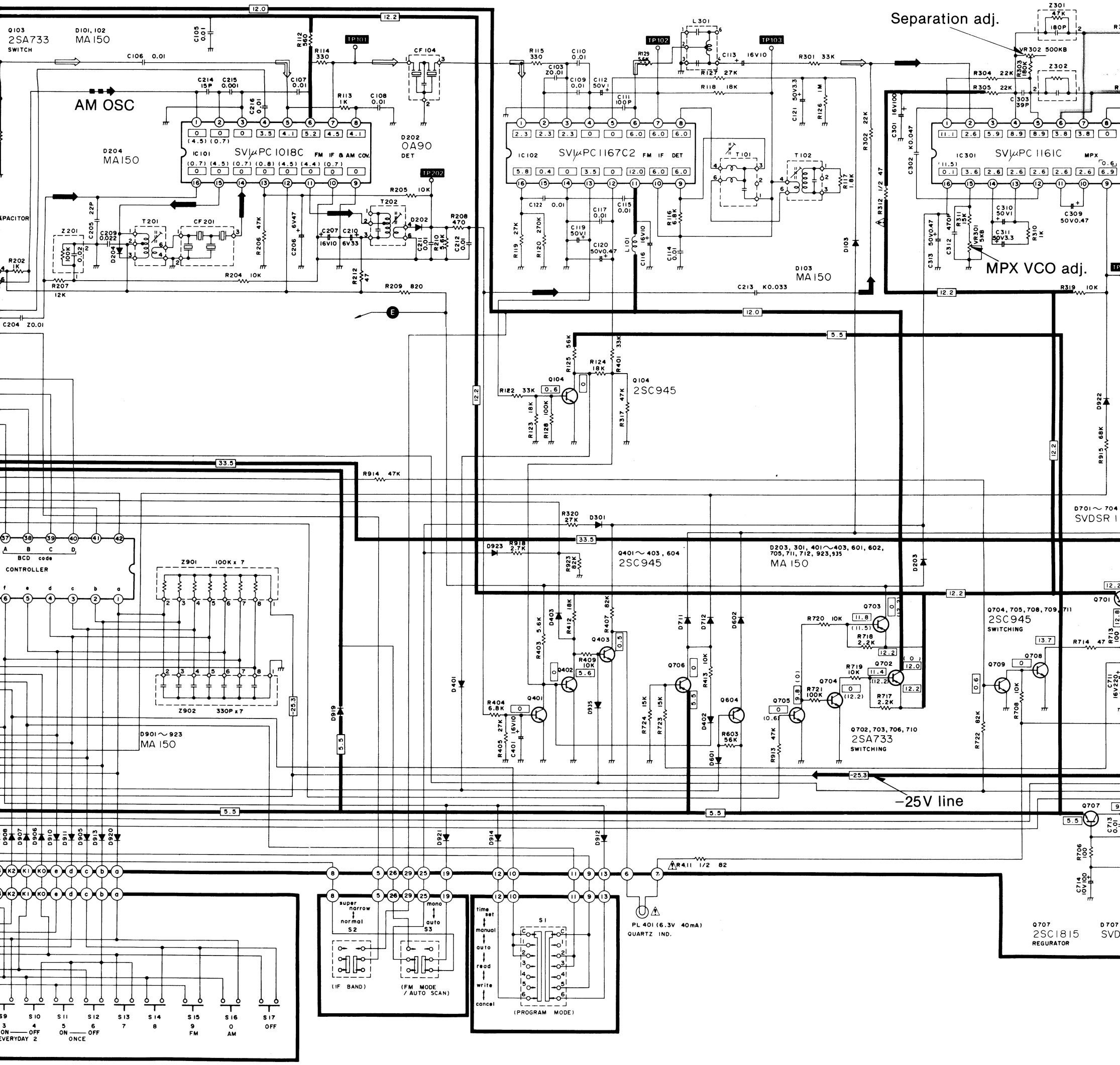


RANK (color)	D901	D902	ADJUSTMENT FREQUENCY	CENTER FREQUENCY
Red	X	X	98.2002 MHz	10.700 MHz
Orange	O	X	98.2252 MHz	10.725 MHz
Blue	O	O	98.1752 MHz	10.675 MHz

Note: O Mark Diode is used.
X Mark Diode is not used.

When frequency is not indi
driver, digit circuit, and mic
by oscilloscope.
In this case, take care not to
terminals or application of v
ment to IC terminals.

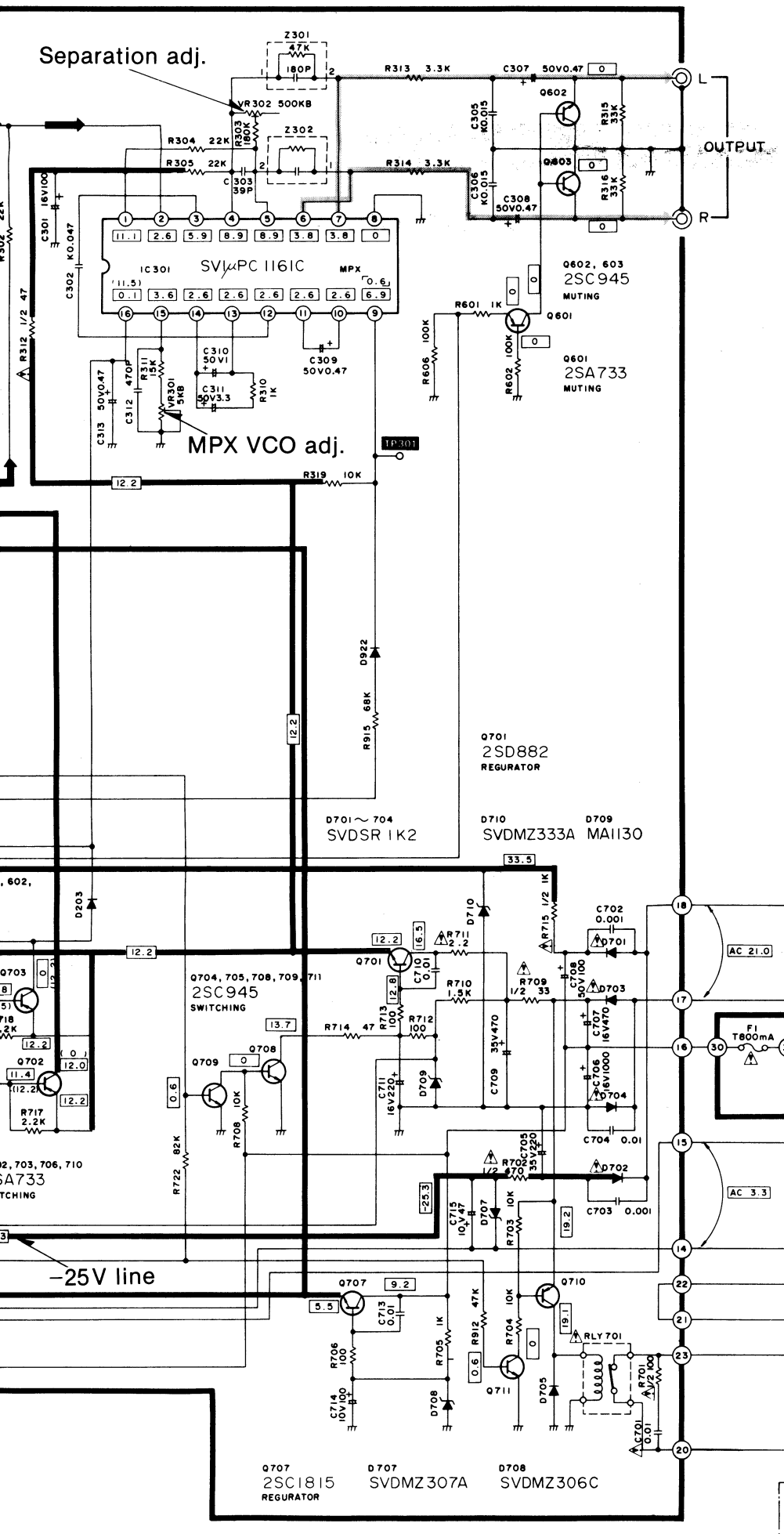
8 9 10 11 12 13 14



R ICY
Hz
Hz
Hz

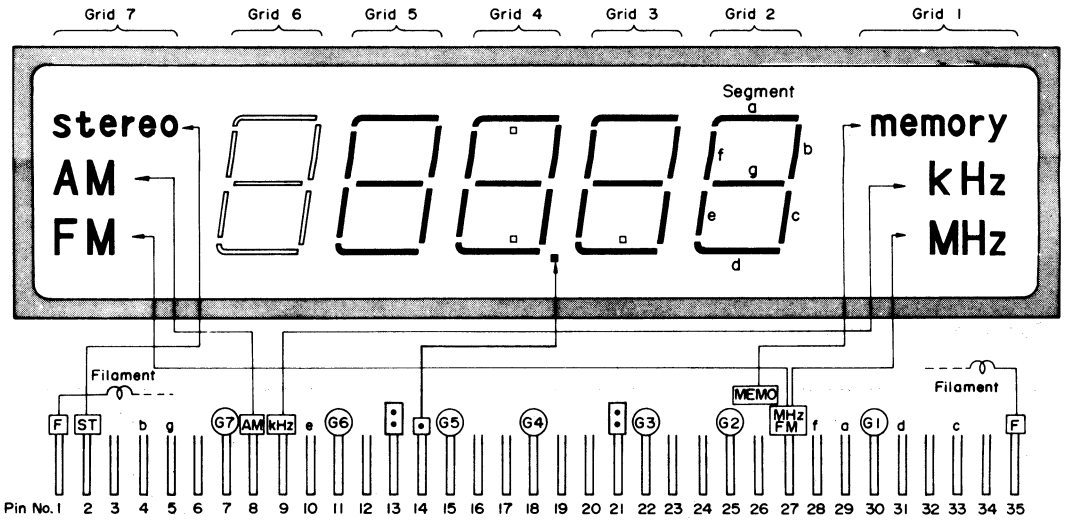
When frequency is not indicated, FL (display tube), FL driver, digit circuit, and micro-computer must be checked by oscilloscope.
In this case, take care not to allow shortcircuit between IC terminals or application of voltage from measuring instrument to IC terminals.

13 14 15 16 17



• Product for Denmark [DM] only.

• Fluorescent Display Tube (FL)



Notes:

1. **S1** : Program mode switch in "**time set**" position.
   time set ⟷ manual ⟷ auto ⟷ read ⟷ write ⟷ cancel
2. **S2** : FM IF band switch in "**normal**" position.
   normal, super narrow
3. **S3** : Auto scan/FM mode switch in "**on/FM auto**" position.
   on/FM auto, off/FM mono
4. **S4** : Memory switch in no push condition.
5. **S5** : Manual tuning switch (down) in no push condition.
6. **S6** : Manual tuning switch (up) in no push condition.
7. **S7 ~ 14** : Preset tuning switch in no push condition. (1 ~ 8)
8. **S15** : FM selector switch.
9. **S16** : AM selector switch.
10. **S17** : Power off switch.
11. **S18** : FM/AM allocation selection switch in "**FM 0.05MHz/AM 9 KHz**" position.
    FM 0.05MHz/AM9KHz ⟷ FM 0.2MHz/AM 10KHz
12. **S19** : Voltage selector switch in "**220V**" position.
    110V ⟷ 120V ⟷ 220V ⟷ 240V
13. Indicated voltage values are the standard values for the measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ▭ stand for DC voltage in FM signal reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM stereo signal reception mode.
    * Figures in 〈 〉 stand for DC voltage in FM (super narrow) signal reception mode.
    * Figures in ( ) stand for DC voltage in AM signal reception mode.
14. Signal lines
    ⇨ / ⇨ FM signal ➡ / ➡ AM signal
    Audio frequency signal ▬ Positive voltage lines
15. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety.
    When replacing any of these components, use only manufacturer's specified parts.

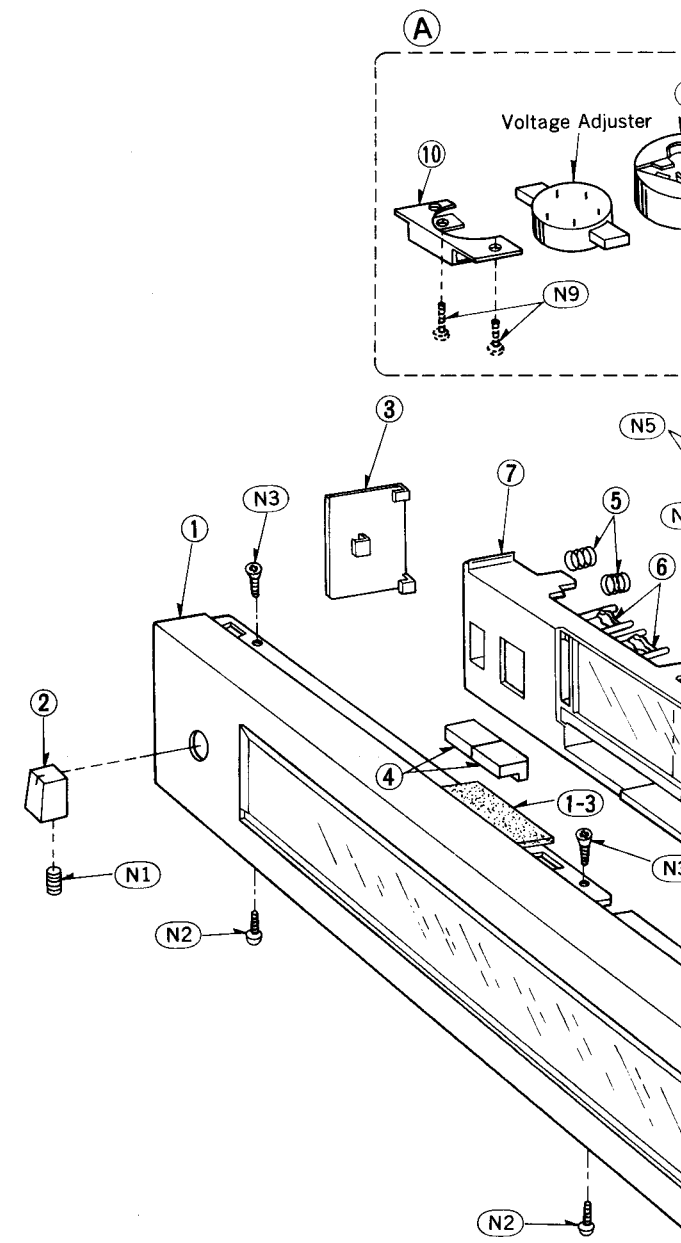
Continued from page 16

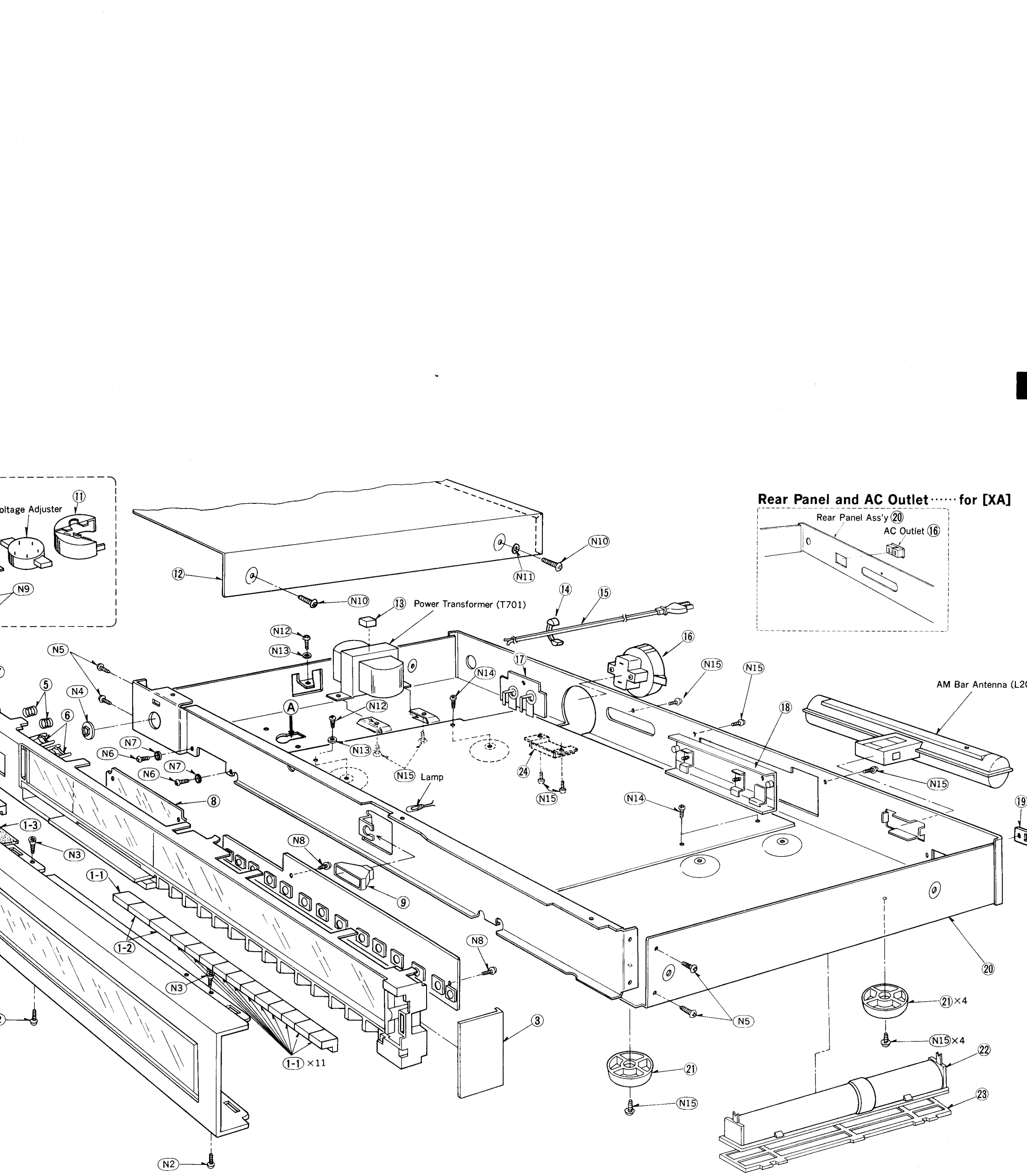
Ref. No.		Part No.	Part Name & Description
C12		ECCD1H030C	Ceramic, 50V, 3pF, ±0.25pF
C13		ECCD1H100K	Ceramic, 50V, 10pF, ±10%
C14		ECCD1H181K	Ceramic, 50V, 180pF, ±10%
C15		ECCD1H0R5CC	Ceramic, 50V, 0.5μF, ±0.25pF
C16		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C17		ECCD1H080DC	Ceramic, 50V, 8pF, ±0.5pF
C18		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80% −20%
C20		ECCD1H330KC	Ceramic, 50V, 33pF, ±10%
C21		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80% −20%
C22		ECCD1H100KC	Ceramic, 50V, 10pF, ±10%
C23		ECCD1H010CC	Ceramic, 50V, 1pF, ±0.25pF
C24		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C25		ECCD1H050C	Ceramic, 50V, 5pF, ±0.25pF
C101, 102		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C103, 104		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C105, 106		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C107, 108		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C109, 110		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C111		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C112		**ECEA50Z1**	Electrolytic, 50V, 1μF
C113		ECEA1CN100S	Non-Polar Electrolytic, 16V,10μF
C114, 115		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C116		**ECEA1HS100**	Electrolytic, 16V, 10μF
C117		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C119		**ECEA50Z1**	Electrolytic, 50V, 1μF
C120		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C121		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C122		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C201		ECQM1H473KZ	Polyester, 50V,0.047μF, ±10%
C202		ECQP1471JZ	Polypropylene, 100V, 470pF, ±5%
C203		ECCD1H180KC	Ceramic, 50V, 18pF, ±10%
C204		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C205		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C206		**ECEA1AS470**	Electrolytic, 6.3V, 47μF
C207		**ECEA1HS100**	Electrolytic, 16V, 10μF
C209		ECKD1H223ZF	Ceramic, 50V,0.022μF, +80% −20%
C210		**ECEA1CS330**	Electrolytic, 6.3V, 33μF
C211, 212		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C213		ECQM1H333KZ	Polyester 50V,0.033μF, ±10%
C214		ECCD1H150KC	Ceramic, 50V, 15pF, ±10%
C215		ECKD1H102ZF	Ceramic, 50V,0.001μF, +80% −20%
C216		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C301		**ECEA1ES101**	Electrolytic, 16V, 100μF

Ref. No.		Part No.	Part Name & Description
C302		ECQM1H473KZ	Polyester, 50V,0.047μF, ±10%
C303		ECCD1H390K	Ceramic, 50V, 39pF, ±10%
C305, 306		ECQM1H153KZ	Polyester, 50V,0.015μF, ±10%
C307, 308		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C309		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C310		**ECEA50Z1**	Electrolytic, 50V, 1μF
C311		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C312		ECQP1471JZ	Polypropylene, 100V, 470pF, ±5%
C313		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C401		**ECEA1HS100**	Electrolytic, 16V, 10μF
C701	⚠	ECKDKC103PF	Ceramic, 400VAC, 0.01μF, +100 −0%
C702, 703		ECKD2H102KB	Ceramic, 500V,0.001μF, ±10%
C704		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C705		**ECEA1VS221**	Electrolytic, 35V, 220μF
C706		**ECEA1CS102**	Electrolytic, 16V, 1000μF
C707		**ECEA1CS471**	Electrolytic, 16V, 470μF
C708		**ECEA1HS101**	Electrolytic, 50V, 100μF
C709		**ECEA1VS471**	Electrolytic, 35V, 470μF
C710		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C711		**ECEA1CS221**	Electrolytic, 16V, 220μF
C713		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C714		**ECEA1AS101**	Electrolytic, 10V, 100μF
C715		**ECEA1AS470**	Electrolytic, 10V, 47μF
C901, 902		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C903		**ECEA1VS221**	Electrolytic, 35V, 220μF
C905, 906		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C907		**ECEA50M4R7R**	Electrolytic, 50V, 4.7μF
C908		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C909		**ECEA1HS100**	Electrolytic, 16V, 10μF
C910		**ECEA1AS470**	Electrolytic, 6.3V, 47μF
C911		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C912		**ECEA0JS102**	Electrolytic, 6.3V, 1000μF
C913		ECCD1H270KC	Ceramic, 50V, 27pF, ±10%
C914		**ECEA50MR33R**	Electrolytic, 50V, 0.33μF
C915		**ECEA1AS101**	Electrolytic, 6.3V, 100μF
C916		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80% −20%
C961		**ECEA1ES220**	Electrolytic, 16V, 22μF
C981		**ECEA1AS221**	Electrolytic 6.3V, 220μF

■ EXPLODED VIEW

Ⓐ



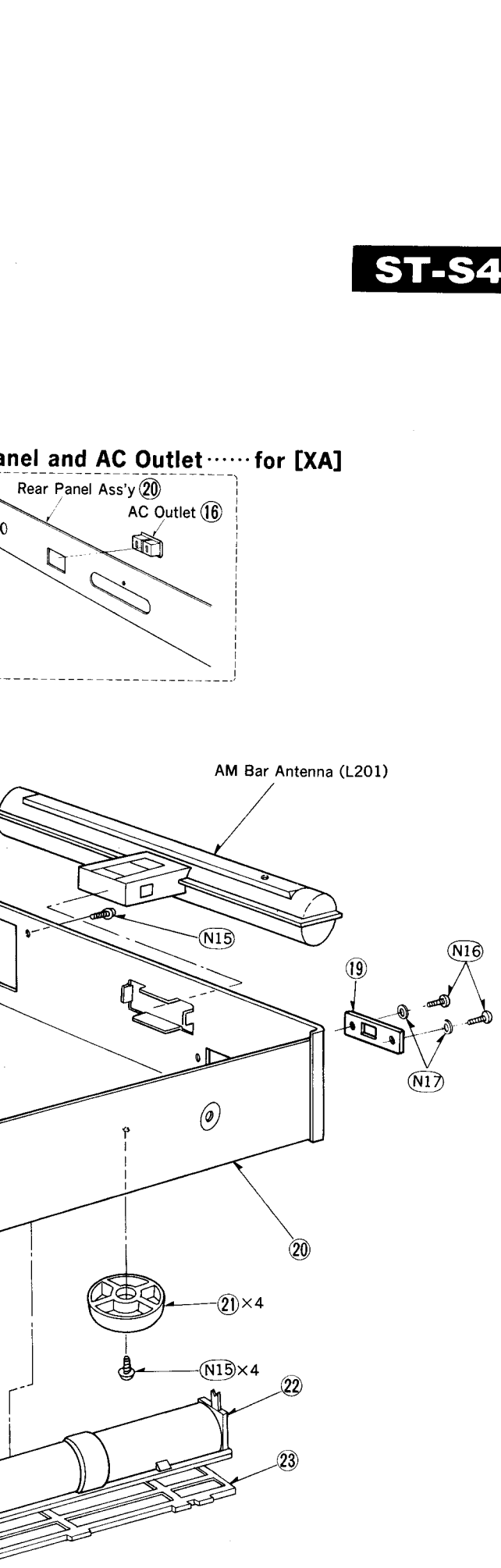


■ REPLACEMENT PARTS LIST ..... (Cabinet and Chassis Parts)

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. [K]-marked parts are used for black O-marked parts are for silver type only.
4. Parts other than [K]- and O-marked are us black and silver types.
5. Bracketed indications in Ref. No. columns area. Parts without these indications can be areas.

Black type model No. : ST-S4T(K)

anel and AC Outlet ····· for [XA]



inet and Chassis Parts)

3. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
4. Parts other than Ⓚ- and ○-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

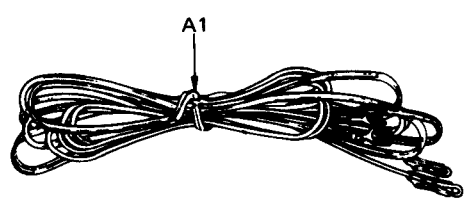
Black type model No. : ST-S4T(K)

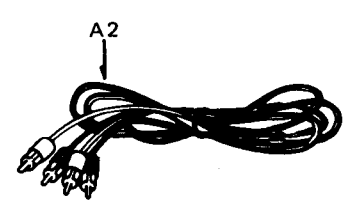
Areas

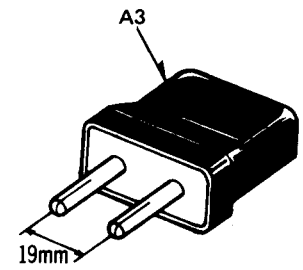
- * [DX] is available in Scandinavia except European and Denmark.
- * [EG] is available in F.R. Germany.
- * [EF] is available in France.
- * [EH] is available in Holland.
- * [EB] is available in Belgium.
- * [DM] is available in Denmark.
- * [EK] is available in United Kingdom.
- * [EW] is available in Switzerland.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.

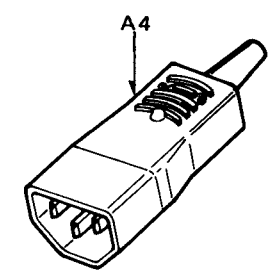
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	○	SGWTS4TE	Front Panel Ass'y
1	Ⓚ	SGWTS4TKE	Front Panel Ass'y (Black)
1–1		SBC341	Button, Memory, FM/AM Preset Tuning, Selector
1–2		SBC343	Button, Tuning
1–3		SHG6063–1	Spacer, Front Panel Ass'y
2		SBN997	Knob, Program Mode Switch
3	○	SGX7003–1	Ornament, Left and Right Side
3	Ⓚ	SGX7003	Ornament, Left and Right Side (Black)
4		SBC341	Button, FM IF Band, Auto Scan/FM Mode
5		SUS231–1	Spring, Button
6		SBZ601	Holder, Button
7	○	SGXTS4TE	Front Sub Panel Ass'y
7	Ⓚ	SGXTS4TKE	Front Sub Panel Ass'y (Black)
8		SHR5113–1	Filter, FL
9		SHG1383–1	Holder, Lamp
10		SMN1635	Bracket, Voltage Adjustment Switch
11 [XA except]		SUV473	Cover, Voltage Adjustment Switch
12	○	SKCTS4TE	Cabinet Cover
12	Ⓚ	SKCTS4TKE	Cabinet Cover (Black)
13		SHG647	Rubber, Power Transformer
14		SHR131	Bushing, AC Cord
14 [DM] only		SHR127	Bushing, AC Cord
14 [XA] only		RHR111	Bushing, AC Cord
15	⚠	SJA103–1	AC Cord
15 [DM] only	⚠	**SJA97**	AC Cord
15 [EK] only	⚠	**QFC1206M**	AC Cord
15 [EW] only	⚠	SJA119	AC Cord
16	⚠	SJS9309	Socket, AC Outlet
16 [DM] only	⚠	SJS9311	Socket, AC Outlet
16 [EK] only	⚠	SJS9321	Socket, AC Outlet
16 [EW] only	⚠	SJS9307	Socket, AC Outlet
16 [XA] only	⚠	SJSA66–2	Socket, AC Outlet
17		SJF3207–5N	Terminal Board
18		SJF4419–4	Terminal Board, Antenna
18 [EG] only		SJF4311–4	Terminal Board, Antenna
19		SHR5073–1	Stopper, Allocation Switch
20 [DX] only		SGPTS4TE1	Rear Panel Ass'y
20 [EG] only		SGPTS4TE2	Rear Panel Ass'y
20 [DM] only		SGPTS4TE3	Rear Panel Ass'y
20 [EK] only		SGPTS4TE4	Rear Panel Ass'y
20 [EW] only		SGPTS4TE5	Rear Panel Ass'y
20 [XA] only		SGPTS4TE6	Rear Panel Ass'y
20 [EF, EH, EB] only		SGPTS4TE8	Rear Panel Ass'y
21		SKL227	Foot
22		SYE697	Battery Case
23		SJB9001	Battery Cover
24 [DX, EG, EF, EH, EB, DM] only		SUH555	Bracket, AC Outlet
SCREWS, WASHERS and NUT			
N1		XXES4D5FZS	Screw
N2		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕3 x 8
N3		**XTS3+8BFZ**	Screw, Tapping ⊕3 x 8
N4		SNE4021	Nut
N5		**XTS3+8B**	Screw, Tapping ⊕3 x 8
N6		**XSN3+6S**	Screw, ⊕3 x 6
N7		**XWA3B**	Washer, Spring ϕ3
N8		**XTB3+8BFZ**	Screw, Tapping ⊕3 x 8
N9		XTB3+14BFZ	Screw, Tapping ⊕3 x 14
N10	○	**XTB4+8BFN**	Screw, Tapping ⊕3 x 8
N10	Ⓚ	**XTB4+8BFZ**	Screw, Tapping ⊕3 x 8
N11	○	**XWC4B**	Washer, External Toothed Lock ϕ4
N11	Ⓚ	**XWC4BFZ**	Washer, External Toothed Lock ϕ4
N12		**XTN3+8B**	Screw, Tapping ⊕3 x 8
N13		**XWG3**	Washer, Plain ϕ3
N14		XTBS3+8BFZ1	Screw, Tapping with Detent ⊕3 x 8
N15		**XTB3+10BFZ**	Screw, Tapping ⊕3 x 10
N16		**XSN3+6BVS**	Screw, ⊕3 x 6
N17		**XWA3BFZ**	Washer, Spring ϕ3
ACCESSORIES			
A1		SSA267	Cord, FM Feeder Antenna
A2		SJP2129–5	Cord, Stereo Pin-Type Connection
A3 [XA] only	⚠	RJP120ZBS	Plug Adapter, AC Power
A4 [EK] only	⚠	SJP5309	Plug Adapter, AC Power
A5 [EG] only		SQF10827	Instructions Book, Printed Matter
A5 [EK] only		SQF10829	Instructions Book, Printed Matter
A5 [XA] only		SQF10831	Instructions Book, Printed Matter
A5		SQF10969	Instructions Book, Printed Matter
PACKING PARTS			
P1		SPP647	Polyethylene Bag
P2		SPS3029–3	Pad, Front
P2 [XA] only		SPS3029	Pad, Front
P3		SPS3031–6	Pad, Rear
P3 [XA] only		SPS3031–4	Pad, Rear
P4	○	SPG3099	Carton Box
P4 [XA] only	○	SPG3171	Carton Box
P4 [EG] only	Ⓚ	SPG3105	Carton Box (Only for F.R. Germany of black type)
P4 [EF] only		SPG3103	Carton Box

•Accessories









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81074000 Ⓗ SH/TN

ORDER NO. SD81072007C4

Service Manual

QUARTZ Synthesizer FM/AM Stereo Tuner

ST-S4T

[PA], [PE]

Areas

* [PA] is available in for East PX.
* [PE] is available in European Military.

Please use this manual together with the service manual for Model No. ST-S4T/ST-S4T (K) Order No. SD81071902C8.

CHANGES

■ REPLACEMENT PARTS LIST

Ref. No.	Change of Part No. ST-S4T/ST-S4T (K) (ORDER NO. SD81071902C8)	Change of Part No. ST-S4T [PA, PE]	Part Name & Description	Per Set (Pcs.)		Remarks
RESISTORS						
R313, 314	ERD25FJ332	**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ± 5%	2		
R315, 316	ERD25TJ333	**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ± 5%	2		
CAPACITORS						
C305, 306	ECQM1H153KZ	**ECQM1H273JZ**	Polyester, 50V, 0.027μF, ± 5%	2		ARD
CABINET and CHASSIS PARTS						
1	SGWTS4TE SGWTS4TKE	SGWTS4TE	Front Panel Ass'y	1		○
3	SGX7003–1 SGX7003	SGX7003–1	Ornament, Left and Right Side	1		○
7	SGXTS4TE SGXTS4TKE	SGXTS4TE	Front Sub Panel Ass'y	1		○
11	SUV473	Deletion	.....	0		
12	SKCTS4TE SKCTS4TKE	SKCTS4TE	Cabinet Cover	1		○
14	SHR131 SHR127 RHR111	RHR111	Bushing, AC Cord	1		
15	SJA103–1 SJA97 QFC1206M SJA119	**RJA52Z**	AC Cord	1		RD
16	SJS9309 SJS9311 SJS9321 SJS9307 SJSA66–2	SJSA66–2	Socket, AC Outlet	1		
18	SJF4419–4 SJF4311–4	SJF4419–4	Terminal Board, Antenna	1		

Technics

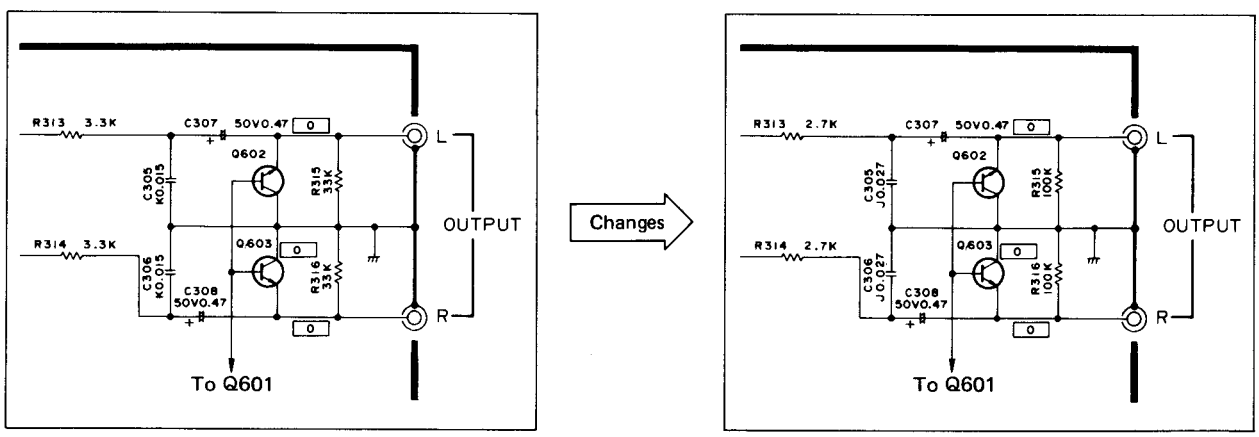
Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)		Remarks
	ST-S4T/ST-S4T (K) (ORDER NO. SD81071902C8)	ST-S4T [PA, PE]				
20	SGPTS4TE1	SGPTS4TE7	Rear Panel Ass'y	1		○
	SGPTS4TE2					
	SGPTS4TE3					
	SGPTS4TE4					
	SGPTS4TE5					
	SGPTS4TE6					
	SGPTS4TE8					
24	SUH555	Deletion	. . . . .	0		
SCREWS, WASHERS and NUT						
N10	XTB4+8BFN	**XTB4+8BFN**	Screw, Tapping, ⊕ 3 x 8	4		WDD
	XTB4+8BFZ					
N11	XWC4B	**XWC4B**	Washer, External Toothed Lock, ϕ4	4		WDD
	XWC4BFZ					
N15	XTB3+10BFZ	Deletion	Screw, Tapping ⊕ 3 x 10	2		
ACCESSORIES						
A3	Addition	RJP120ZBS	Plug Adaptor, AC Power	1		
A4	SJP5309	Deletion	. . . . .	0		
A5	SQF10827	SQF10833	Instructions Book, Printed Matter	1		○
	SQF10829					
	SQF10831					
	SQF10969					
PACKING PARTS						
P2	SPS3029–3	SPS3029	Pad, Front	1		○
	SPS3029					
P3	SPS3031–6	SPS3031–4	Pad, Rear	1		○
	SPS3031–4					
P4	SPG3099	SPG3171	Carton Box	1		○
	SPG3171					
	SPG3105					
	SPG3103					

■ SCHEMATIC DIAGRAM

- **De-emphasis circuit**



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